

THE PROBLEM OF OFF DUTY TIME IN LONG DURATION SPACE MISSIONS

Volume III
AN ANNOTATED BIBLIOGRAPHY

October 1967

Prepared by
John W. Eberhard
Kristine T. Smith

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SERENDIPITY ASSOCIATES

McLean, Virginia

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FOREWORD

This annotated bibliography is one of three volumes dealing with the off duty time problem in long duration space flight. The contents of the report can be used as supporting material for either the final report (Volume II) in the performance of trade-off studies concerning utilization of time and design of activities during mission design or in obtaining background information to further understand and detail the research requirements presented in Volume I. This work was performed by Serendipity Associates under Contract No. NASw-1615 for the National Aeronautics and Space Administration, Washington, D. C.

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INTRODUCTION

This bibliography is comprised of publications which contain information pertinent to problems of off duty time in long duration manned space flight. Reports of successful space flights, studies on mission requirements, and studies of special isolated groups were searched for data on actual available off duty time, its utilization, and the effects of excessive off duty time on the individual and on the group. We were especially reviewing sleep requirements, work opportunities, and possible and probable activities for off duty time periods.

The arrangement of citations and the general format for each were designed for both the human factors mission analyst and the research oriented individual. The mission analyst will find additional background information required to support trade off studies. The research scientist will find additional data from which to extend this study.

For benefit of the readers, we have arranged the citations into two primary groups, each with a number of sub-groups, according to the following scheme:

Intact group studies

- Antarctic
- Underwater
- Remote Sites
- Space Flight

Studies and Reviews

- Mission Requirements
- Space Flight Factors
- Space Simulations
- Sleep and Work/Rest Cycles
- Leisure
- Laboratory
- Small Group Factors

Material within the sub-group is arranged alphabetically. Each sub-group divider contains an index of the material within that sub-group. The index permits a ready review of information on the number of groups studied, the smallest/largest group size, group composition, least/most number of days allocated for study, off duty time available, number of off duty time or discretionary activities, and whether an abstract is presented.

A few words of explanation concerning the sources of the abstracts may be appropriate. We have relied heavily on author abstracts and on abstracts contained in Dr. T. M. Fraser's report, "Man in Confinement." Abstracts were re-written in order to focus more directly on the questions examined in the current report.

References for the current annotated bibliography came from bibliographies listed in key references, bibliographical searches performed by the Defense Documentation Center (ARB A 75833, POR 211626; ARB 076894, POR 190667; and ARB B 75833); the Western Research Application Center, Graduate School of Business Administration, University of California (Search No. 19-63) and the National Library of Medicine (MEDLARS No. 133085). In addition, a request for a listing of current research efforts was sent to the Smithsonian Institution's Science Information Exchange; however, we were informed that no current work in this field was registered. Finally, the most fruitful source of recent information came through contacting individuals performing work in relatable areas. We gratefully acknowledge Dr. J. T. Shurley and Dr. C. M. Pierce of the Veterans Administration Hospital in Oklahoma; Dr. E. K. E. Gunderson of the Navy Neuropsychiatric Research Institute in San Diego, California; and John P. Robinson of the Survey Research Center, University of Michigan, for their encouraging interest and assistance in presenting the most up-to-date, unpublished information in the area of off duty time and discretionary activities.

[illegible]

[illegible]

INDEX NO: 1

Acc. No.:

AUTHOR: Byrd, Richard E.

Pub. Date: 1938

AGENCY/COMPANY G. P. Putnam's Sons
New York, New York

Rept. No:

TITLE: Alone

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 2

Acc. No.: AD 632 571

AUTHOR: Gunderson, E. K. E.

Pub. Date: March 1966

AGENCY/COMPANY

Rept. No: 66-4

U. S. Navy Medical Neuropsychiatric Research
San Diego, California

TITLE: Adaptation to Extreme Environments: The Antarctic Volunteer

ABSTRACT:

This report described the Antarctic Research Program, the Antarctic environment, characteristics of small stations, and the composition of wintering-over parties. Demographic and biographic characteristics of Antarctic volunteers, Navy and civilian, were analyzed, and preenlistment histories and military performance records of Navy Antarctic volunteers were compared with those of Navy men generally. The selection process was portrayed for Navy occupations represented at small stations, and ratios of applicants to assignments for three expeditions were presented. A detailed analysis was conducted of cultural and psychological differences among Antarctic occupational groups.

The data reviewed in this survey--the first of two parts--were intended to present a rather complete picture of the Antarctic setting and the characteristics of Antarctic volunteers. In the second report, a series of studies concerned with sources and effects of stress, measurement of individual and group performance, patterns of emotional and motivational change in wintering-over groups, and methods for prediction of performance will be summarized.

	Special characteristics	Performance measures
Number of groups	Antarctic: -tour of duty is 1 year -isolated and inaccessible from February to November; no abort possibility -intermittent radio communication -extreme weather conditions -size range between stations 8-260 -military-civilian ratio approximately 60%-40% ----- -survey of previously gathered data	
Group size or range		
Group composition		
Navy, Civilian (Volunteers)		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 3

Acc. No.: AD 632 996

AUTHOR: Gunderson, E. K. E.

Pub. Date: April 1966

AGENCY/COMPANY

Rept. No: 66-17

U. S. Navy Medical Neuropsychiatric Research
San Diego, California

TITLE: Adaptation to Extreme Environments: Prediction of Performance

ABSTRACT:

This report summarizes a series of studies concerned with environmental and psychological factors related to adjustment or performance in isolated Antarctic groups. These studies were designed to provide support for the Navy's psychiatric assessment program and to aid in selection of suitable military and civilian applicants for service at Antarctic scientific stations. Possible sources and effects of stress in this type of confined environment are considered. Methods developed for the measurement of individual and group performance are described and results of studies conducted to evaluate the predictive validities of biographical, clinical, and personality data are presented in detail. Studies of emotional and motivational changes during the long Antarctic winter and the relationships of such changes to occupational and social roles, psychological needs, and effective work performance are reported.

Special characteristics		Performance measures	
Number of groups	-Refer to No. 2	-observations by peers and supervisors -symptoms questionnaires	
Group size or range			
Group composition			Navy, Civilians (Volunteers)
Length of study or mission			
Off-duty time requirements			-poor recreation facilities are source of stress
Off-duty time activities			

INDEX NO: 4

Acc. No.: AD 636 133

AUTHOR: Gunderson, E. K. E.

Pub. Date: 1963

AGENCY/COMPANY

Rept. No:

Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Emotional Symptoms in Extremely Isolated Groups

ABSTRACT:

This study was concerned with measurement of emotional reactions in several groups of scientists and Navy men who were exposed to prolonged isolation and confinement at scientific stations in Antarctica. The conditions of restricted stimulation and activity experienced in the Antarctic groups induced an increase in emotional and physical symptoms in the participants. Most marked and consistent changes were evidenced in items reflecting sleep disturbances, depression, and irritability. Wide individual differences in susceptibility were present, and possible group differences in symptom incidence were noted. Many of the symptoms reported would be expected to have a deleterious effect upon motivation and social adjustment. The study of emotional adaptation in restricted environments requires the development of simple, practical techniques for assessing emotional states under variable and extreme conditions. The value of a simple questionnaire approach was suggested.

Special characteristics		Performance measures
Number of groups	- Refer to No. 2	- questionnaires covering somatic and emotional symptoms - 3 times per group
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 5

Acc. No.:

AUTHOR: Gunderson, E. K. E.

Pub. Date: August 1964

AGENCY/COMPANY

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

Rept. No: 64-19

TITLE: Performance Evaluations of Antarctic Volunteers

ABSTRACT:

Performance evaluations (Enlisted Performance Evaluation Marks) of applicants for Operation Deep Freeze were compared with those of other naval personnel, and volunteers with different amounts of experience were compared with each other. Performance ratings for Deep Freeze candidates were higher than those of other naval personnel of comparable experience. It was concluded that special standards or norms should be established to aid in selection of the best qualified men from this population and that separate norms are required for evaluating performance records of those experienced naval personnel. The Leadership trait may be more discriminating than other traits in this population.

Special characteristics		Performance measures
Number of groups	-refer to No. 2	-6 most recent sets of Enlisted Performance Evaluation scores compared with scores for Navy men in general with similar amount of experience
Group size or range 1442 individuals		
Group composition 100% Navy (Volunteers)		
Length of study or mission 1 expedition		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 6

Acc. No.: AD 814914

AUTHOR: Gunderson, E. K. E.

Pub. Date: December 1962

AGENCY/COMPANY

Rept. No: 62-10

U. S. Naval Medical Neuropsychiatric Research Unit
San Diego, California
Bureau of Medicine and Surgery, Navy Department

TITLE: Personal History Characteristics of Antarctic Volunteers

ABSTRACT:

Personal and social characteristics of Navy and civilian volunteers for four Antarctic expeditions were studied. Distinctive characteristics of Antarctic volunteers were described. The study indicated that a potentially hazardous and difficult duty assignment initially attracted superior Navy applicants. Furthermore, after the novelty and glamor of the program had presumably diminished, the quality of volunteers remained high and probably improved. Navy and civilian volunteers differed from each other on many characteristics of which education, age, and occupational experience were among the most pronounced.

		Special characteristics	Performance measures
Number of groups	4 (combined to make 2 groups)	Refer to No. 2	multiple choice and factual items from personal history data compared with general Navy population data compared with data on U. S. males
Group size or range	1207 total		
Group composition	civilian, Navy (Volunteers)		
Length of study or mission	4 expeditions		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 7

AUTHOR: Gunderson, E. K. E.; and Mahan, J. L.

AGENCY/COMPANY

Acc. No.:

Pub. Date: 1966

Rept. No:

TITLE: Cultural and Psychological Differences Among Occupational Groups

Published: The Journal of Psychology, Vol. 62, pp. 287-304

ABSTRACT:

Cultural background and psychological differences were determined for nine occupational groups which are represented in the U. S. Antarctic Research Program. Cultural differences obtained could be largely subsumed under the concept of family socioeconomic status levels. Variability in personality measures tended to be consistent with those for cultural attributes. These occupational differences appear to have had a profound effect upon validities of biographical and personality data for performance prediction. Social and work roles at Antarctic small stations appeared generally consistent with the cultural and personality data. Heterogeneity in cultural backgrounds and personal values may affect the compatibility and effectiveness of work groups in isolated settings.

Special characteristics		Performance measures
Number of groups	2	-personality questionnaires (inventories)
Group size or range	700-1400	
Group composition	Navy, Civilians (Volunteers) for Antarctic	
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 8

Acc. No.: AD 635 666

AUTHOR: Gunderson, E. K. E.; and Nelson, P. D.

Pub. Date: December 1963

AGENCY/COMPANY

Navy Medical Neuropsychiatric Research Unit
San Diego, California

Rept. No:

TITLE: Adaptation of Small Groups to Extreme Environments

ABSTRACT:

In three studies at the Neuropsychiatric Research Unit the authors measured subjective emotional responses, individual performance, and several aspects of group functioning in extremely isolated Antarctic groups.

Under conditions of restricted stimulation and activity for prolonged periods, participants reported an increase in the incidence and severity of emotional and somatic symptoms, particularly on items reflecting sleep disturbances, depression, irritability, and anxiety.

The best single measure of effective individual performance was a standard score derived from peer and supervisor choices on an item indicating whom they would prefer to be with if they returned to the Antarctic.

Attitude measures revealed a general decline in work satisfaction, social relationships, and group accomplishment. Maintenance of group harmony and efficiency would appear to be a difficult but not impossible task in extremely isolated groups. Attitude measures of group cooperation and achievement related consistently to an independent criterion of group effectiveness.

		Special characteristics	Performance measures
Number of groups	9	-refer to No. 2 -3 major studies summarized	-subjective reactions, questionnaires -superior and peer evaluations
Group size or range	15-40		
Group composition			
Length of study or mission	3 years		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 9

Acc. No.: AD 281383

AUTHOR: Gunderson, E. K. E. ; and Nelson, P. D.

Pub. Date: March 1962

AGENCY/COMPANY

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

Rept. No: 62-1

TITLE: Adjustment Criteria in Antarctica

ABSTRACT: The purpose of this paper is to discuss efforts to establish satisfactory criterion measures in an extremely unusual and stressful environment, that of Antarctica.

In 1956 the Navy's Bureau of Medicine and Surgery was requested to undertake psychiatric assessment of all personnel, military and civilian, who applied to participate in Antarctic expeditions during the International Geophysical Year as well as subsequent expeditions. As a result, over the past six years psychiatric screening information, which includes personal history data, psychologists' and psychiatrists' examinations and evaluations, and various self-description test inventories, have been collected on approximately 1,700 military and civilian personnel prior to their deployment to Antarctica. Evaluations of work and social adjustment were obtained for over 500 individuals who wintered over in the Antarctic during 1957 through 1961. This report summarizes studies of the supervisor and peer ratings included in these evaluations in terms of their agreement and their consistency over time. Our studies to date support the notion that stable and meaningful adjustment criteria probably can be developed in the Antarctic setting, in spite of the staggering difficulties of collecting psychological assessment data in such a remote and stressful environment.

Special
characteristics

Performance
measures

Number of groups	-refer to No. 2	-supervisor, peer evaluations of performance and attitude
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 10

Acc. No.: AD 634420

AUTHOR: Gunderson, E. K. E. ; and Nelson, P. D.

Pub. Date: 1966

AGENCY/COMPANY

Rept. No: 64-27

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California 92152

TITLE: Life Status and Interpersonal Values

ABSTRACT:

Relationships of 13 life history and status variables to the six scales of the Survey of Interpersonal Values (SIV) were examined in a population of Navy volunteers for duty in Antarctica. The Support scale was significantly related to age, experience, and rank while Benevolence was related to rank, previous Antarctic experience, and participation in worship. These and other results suggested that the SIV value scales were sensitive to differences in current life status, but generally insensitive to differences in familial and cultural background. Since the SIV was designed to measure present value orientations, the study provided evidence for concurrent validities of some of the scales.

Special characteristics		Performance measures
Number of groups	Operation Deep Freeze applicants	- 13 life history and status variables related to: 6 scales of Survey of Interpersonal Values
Group size or range		
Group composition		
Group Navy, Civilians (Volunteers)		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 11

Acc. No.: AD 424924

AUTHOR: Gunderson, E. K. E.; and Nelson, P. D.

Pub. Date: October 1963

AGENCY/COMPANY

Rept. No: 63-16

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Measurement of Group Effectiveness in Natural Isolated Groups

ABSTRACT:

The systematic study of interpersonal relations and productivity in natural isolated groups requires measurement techniques which are practicable for administration in groups operating under variable or extreme environmental conditions. In the present study simple questionnaire scales designed to measure group cooperation and effectiveness demonstrated acceptable reliability and were shown to relate consistently to an independent criterion of group effectiveness. Significant changes in social relations and group accomplishment were recorded in several of the Antarctic groups studied.

Maintenance of group organization, harmony, and efficiency under conditions of long-term isolation and confinement such as exist at Antarctic stations appears to be a very difficult but not impossible task.

		Special characteristics	Performance measures
Number of groups	Phase I: 9 Phase II: 9	I: -refer to No. 2	I: -questionnaires given twice to each group
Group size or range	I: unspecified II: 14-40		
Group composition	I: Navy, Civilians (Volunteers) II: 35% civilian, 65% Navy		
Length of study or mission	I: 3 expeditions II: 3 expeditions	II: -refer to No. 2	II: -similar questionnaires
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 12

Acc. No.: AD 644 809

AUTHOR: Gunderson, E. K. E.; and Nelson, P. D.

Pub. Date: May 1966

AGENCY/COMPANY

Rept. No: 65-2

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Personality Differences Among Navy Occupational Groups

ABSTRACT:

Differences among six Navy occupational groups (Administrative, Technical, Mechanical, Electrical, Construction, and Cooks) were determined for 31 personality and value scales, including the Allport-Vernon-Lindzey Study of Values, the Survey of Interpersonal Values, and the FIRO-B Inventory. Age and Navy experience were controlled by dividing groups into "experienced" and "inexperienced" categories. Significant differences between groups were present for 29 of the 62 comparisons. Most of the variance in test scores among groups could be accounted for by dichotomizing the six occupational specialties into two broad categories, "white collar" (Administrative and Technical) and "blue collar" (other groups). The results suggested relationships between choice of occupational specialty and the value systems, needs, and motivations of individuals in the naval service.

Special characteristics		Performance measures
Number of groups	2	-occupational groups related to personality and value scales
Group size or range	561 in all	
Group composition	Navy (Volunteers for Antarctic)	
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 13

Acc. No.: AD 631 984

AUTHOR: Gunderson, E. K. E.; and Nelson, P. D.

Pub. Date: November 1965

AGENCY/COMPANY

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

Rept. No: 65-1

TITLE: Socio-Economic Status and Navy Occupations

ABSTRACT:

The relationship of parents' socio-economic status to Navy occupation was determined for 1,060 naval personnel in 16 occupational categories. Officers were significantly higher on the socio-economic index than enlisted men, and when Navy enlisted rates (jobs) were grouped into 2 broad categories, white-collar and blue-collar, the white-collar group scored significantly higher on the index than the blue-collar. The observed differences in socio-economic background among Navy occupational groups suggests possible concomitant variations in value systems, achievement strivings, and personality disorders.

	Special characteristics	Performance measures
Number of groups		-biographical questionnaire
Group size or range 1,060 individuals		
Group Navy--15% officers, 85% en- composition listed, (Volunteers for Antarctic)		
Length of study or mission 6 year period studied		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 14

Acc. No.: AD609542

AUTHOR: Gunderson, E. K. E. ; Nelson, P. D. ; and
Orvick, J. M.

Pub. Date: August 1963

AGENCY/COMPANY U. S. Navy Medical Neuropsychiatric Research Rept. No: 64-22
Unit
San Diego, California

TITLE: Personal History Correlates of Military Performance at A
Large Antarctic Station

ABSTRACT: Relationships between biographical predictors and superiors' ratings were examined for two samples of Navy men who wintered-over at a large Antarctic base. Results for the large station personnel were very similar to those for Navy men studied earlier at smaller stations with respect to the favorability of an age-experience-rank cluster of variables and the unfavorability of past delinquency-truancy record. For a cluster of variables pertaining to needs for avocational activities, however, validity indicators tended in opposite directions for the two populations, low avocational activity being related to better adjustment at small stations. These findings demonstrated significant effects of environmental and organizational factors upon the validity of particular biographical predictors.

		Special characteristics	Performance measures
Number of groups	2	-Refer to No. 2 -hierarchical pattern of authority relationships	-biographical predictors compared with superiors' ratings
Group size or range	90-94		
Group composition	100% Navy		
Length of study or mission	samples from two expeditions		
Off-duty time requirements	-at small station, preference for many activities negatively related to adjustment		
Off-duty time activities			

INDEX NO: 15

Acc. No.:

AUTHOR: Herrmann, R. S.

Pub. Date:

AGENCY/COMPANY Special Environments Division
 U. S. N. Medical Neuropsychiatric Research Unit
 San Diego, California 92152

Rept. No:

TITLE: Examiners' Guide: Operation Deep Freeze

ABSTRACT:

The busiest of the personnel was the cook and, at least by the military personnel, he was held in the highest esteem than any other occupation. It is also interesting to note that all individuals did manual labor during the summer months when the materials were being stored. There seemed to be a certain amount of stress created from a function of having both civilian and Navy personnel on-board, particularly when you had people at the same occupational levels that were widely separated in their pay scales.

		Special characteristics	Performance measures
Number of groups	5	-refer to No. 2	-principles for psychiatric examination
Group size or range	9-270		
Group composition	Navy--60%(Volunteers) Civilians--40%		
Length of study or mission	1 year		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 16

Acc. No.:

AUTHOR: Nardini, J.E; Herrmann, R.S.; and Rasmussen, J. E. Pub. Date: 1962

AGENCY/COMPANY

Rept. No:

TITLE: Navy Psychiatric Assessment Program in the Antarctic

Published: American Journal of Psychiatry, 1962, 119, 97-105

ABSTRACT:

The Navy program for psychiatric assessment of personnel wintering over in the Antarctic was described. Thus, it would appear that the program has been effective in identifying and eliminating individuals who will develop serious or incapacitating emotional illnesses under the stress of isolation.

An analysis of data relating to performance effectiveness in the Antarctic shows that there is a significant positive correlation between the initial psychiatric prediction and subsequent performance. However, because of several limitations in the data, the results in this aspect of the study should be interpreted with caution.

Certain shifts have occurred in the assessment criteria during the past five years. The most important variable in adjustment to Antarctic isolation now is considered to be vocational effectiveness. The structure and composition of the small isolated group is next in importance. Except for extreme rigidity, there are no neurotic mechanisms which are considered, per se, to be disqualifying. However, personality disorders do constitute a rather serious problem.

Special
characteristics

Performance
measures

Number of groups	-refer to No. 2 -general summary of 5 years of studies	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 19

Acc. No.: AD 286494

AUTHOR: Nelson, P.D.

Pub. Date: 1962

AGENCY/COMPANY

Rept. No: 62-13

U.S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Leadership in Small Isolated Groups

ABSTRACT:

A study of behavioral characteristics associated with leader esteem was conducted with a sample of ten designated leaders from small Antarctic stations. Supporting the results obtained in other studies of leadership in small, primary living-working groups under confining and isolated conditions, esteemed leadership was found to be a correlate of a relatively democratic leadership orientation, a leadership style characterized by leader participation with the men, by a personal man-to-man relationship between leader and men, and by a leader who respects and seeks the opinions of his men in matters which directly concern them.

The preceding style of leadership appears most effective in the small station setting for the following reasons. First, it facilitates a psychological distance between leader and men which is compatible with the physical and status distances prescribed by the group situation. Secondly, it seems likely to result in decisions which are supported personally by the men and decisions which are based upon the best information possible under the circumstances.

Special characteristics		Performance measures
Number of groups	5	-48 mail questionnaires studied -ratings on respect, strong and weak points, social data and open-end descriptions of leaders -3 of 5 stations; rate leaders on behaviors
Group size or range	2	
Group composition	selected station leaders 5 civilians, 5 Navy physicians	
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 20

Acc. No.: AD 444127

AUTHOR: Nelson, Paul D.

Pub. Date: 1964

AGENCY/COMPANY

Rept. No:

TITLE: Similarities and Differences Among Leaders and Followers

Published: The Journal of Social Psychology, Vol. 63, pp. 161-167

ABSTRACT:

On the basis of the Hollander and Webb study (8) which clearly demonstrated a positive relationship between desirability as a leader and desirability as a follower, the present study was conducted to assess similarities and differences in personal characteristics among four types of individuals--namely, liked leaders, less-liked leaders, liked followers, and less-liked followers. Both liked and less-liked leaders were more self-confident, alert, job motivated, and aggressive than the follower groups of comparable likability. On the other hand, liked leaders and liked followers, in contrast to the less-liked leaders and followers, were more satisfied with the assignment, emotionally controlled, accepting of authority, and motivated to be efficient group members. In terms of their overall profile of attitudes and behavior, the liked leaders and the liked followers were found to be most similar--more so than liked leaders with less-liked leaders, liked followers with less-liked followers, or less-liked leaders with less-liked followers. It was suggested that the underlying orientation in common to liked leaders and followers was an attitude of teamwork and respect for various forms and sources of authority.

Special characteristics		Performance measures
Number of groups	Phase I: 4 Phase II: 4 approximately equal in size	I: -evaluations from one military and one civilian supervisor on overall performance and 21 personal characteristics - "leadership" and "likability" ratings used to form Phase II groups
Group size or range	I: 17-19 72 in all	
Group composition	I: 50% Navy 50% Civilians	
Length of study I: 1 year or mission		
Off-duty time requirements		II: -liked leaders, less-liked leaders, liked followers, and less-liked followers were compared with 13 characteristics from above and with evaluations
Off-duty time activities		

INDEX NO: 17

Acc. No.:

AUTHOR: Nelson, P.D.

Pub. Date: November 1964

AGENCY/COMPANY

Rept. No: 64-13

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California 92152

TITLE: Compatibility Among Work Associates in Isolated Groups

ABSTRACT:

In the present study an attempt was made to identify correlates of work partner compatibility among 14 three- to six-man work groups located in isolated Antarctic stations. Using demographic and self-description data to construct group composition variables and sociometric data to derive compatibility criterion measures, work group homogeneity on age was significantly related to work group compatibility. An additional finding of significance was that a low level of compatibility existed among work associates who were equally high in their need to be interpersonally prominent as through leadership status. A general trend in the study was for group composition variables to be more related to compatibility during the winter than during the summer months, the time period of greatest confinement and isolation from the outside world.

Special characteristics		Performance measures
Number of groups	14	-biographical questionnaire -self-description inventory -work interaction and social compatibility questionnaires
Group size or range	3-6	
Group composition	60% Navy 40% Civilians (Volunteers)	
Length of study or mission	1 year	
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 18

Acc. No.: AD 286493

AUTHOR: Nelson, Paul D.

Pub. Date: June 1962

AGENCY/COMPANY

Rept. No: 62-12

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Human Adptation to Antarctic Station Life

ABSTRACT:

The present paper was devoted to a discussion of the psychological research efforts for the Antarctic program to date. Discussion of human adaptation to any environment must entail both an understanding of the environmental demands and the human response systems which seem most salient and relevant to such demands. Consideration was given the ecological aspects of Antarctic station life, followed by a discussion of adaptation criteria and their correlates.

Adaptation to the demands of Antarctic station life has been considered in terms of an ongoing process of emotional, work, and social adjustment. Most research efforts had been directed towards developing meaningful and reliable measures of such adaptation for the purpose of comparing individuals and station groups. While more effort is yet needed in measuring adaptation as a process rather than as an end state, even greater efforts will be required in future studies of correlates of adaptation. The demographic and personality attributes of station members, the specific work roles of individuals, the group structure, and the demands of the physical environment must be considered relative to one another over time before a more thorough understanding of human adptation will be achieved.

		Special characteristics	Performance measures
Number of groups		-refer to No. 2 -review of previous studies	
Group size or range			
Group composition	Navy, Civilians (Volunteers)		
Length of study or mission			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 21

Acc. No.:

AUTHOR: Nelson, P.D.

Pub. Date: September 1964

AGENCY/COMPANY

Rept. No: 64-24

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Structural Change in Small Isolated Groups

ABSTRACT:

Men who had spent twelve months at one of three Antarctic research stations (N ranging from 17 to 33) provided information at two time periods concerning work, formal communication, and off-duty friendship interactions. The purpose of the study was to ascertain the extent to which group structure changed in any of these three domains of interaction over a six-month period. From analysis of direct, indirect, and reciprocal choices there were no general change patterns common to all station groups or all types of interaction.

Special characteristics		Performance measures
Number of groups	3	-summer compared to winter answers to questionnaires -questions related to work interaction, formal communications and off-duty friendships
Group size or range	17-33	
Group composition	Navy and Civilian (Volunteers)	
Length of study or mission	1 year	
Off-duty time requirements		
Off-duty time activities		Assessment: -no clear-cut pattern of change

INDEX NO: 22

Acc. No.: AD 286 491

AUTHOR: Nelson, P. D.; and Gunderson, E. K. E.

Pub. Date: March 1962

AGENCY/COMPANY US Navy Medical Neuropsychiatric Research
Unit
San Diego, California

Rept. No: 62-3

TITLE: Analysis of Adjustment Dimensions in Small Confined Groups

ABSTRACT:

		Special characteristics	Performance measures
Number of groups	I: 4 stations II: 3 stations III: 2 stations	IV: 3 stations - Refer to No. 2	I: -performance ratings -7 behavior ratings by supervisor -2 stations: peer-behavior ratings
Group size or range			II: -2 supervisors rated all volunteers on 4 dimensions -peer ratings
Group composition	Civilian, Navy (Volunteers)		III: -no resumes -2 supervisors on 2 behavior charts and one overall evaluation
Length of study or mission	1 year each: 1957, 1958, 1960, and 1961		IV: -2 supervisors; same ratings as 1960 -peer nominations
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 23

Acc. No.: AD 429434

AUTHOR: Nelson, P.D.; and Gunderson E.K. E.

Pub. Date: April 1963

AGENCY/COMPANY

Rept. No: 63-8

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Effective Individual Performance in Small Antarctic Stations: A Summary
of Criterion Studies

ABSTRACT:

Special characteristics		Performance measures
Number of groups	6	-Refer to No. 2 -supervisor and peer evaluations of performance -later mail questionnaire
Group size or range	15-40 each	
Group composition	Navy, Civilians (Volunteers)	
Length of study or mission	1 year for each group	
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 24

Acc. No.: AD 432145

AUTHOR: Nelson, P.D.; and Gunderson, E. K. E.

Pub. Date: November 1963

AGENCY/COMPANY U.S. Navy Medical Neuropsychiatric Research Unit
San Diego, California 92152

Rept. No: 63-20

TITLE: Personal History Correlated of Performance Among Military Personnel
in Small Antarctic Stations

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	-Refer to No. 2	-social, task, emotional and "return with" ratings (peer and superior) -biographical data
Group size or range 64		
Group composition 100% Navy		
Length of study or mission 3 expeditions		
Off-duty time requirements -personal activities were negatively related to social compati- bility		
Off-duty time activities		

INDEX NO: 25

Acc. No.: AD 440138

AUTHOR: Nelson, P.D.; and Orvick, J.M.

Pub. Date: April 1964

AGENCY/COMPANY

Rept. No: 64-4

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California 92152TITLE: Personal History Correlates of Performance Among Civilian
Personnel in Small Antarctic Stations

ABSTRACT: Relationships between biographical attributes and performance among civilian members of small Antarctic scientific stations were evaluated in the present study. Of the three-year sample of forty-eight men, half were meteorologists (weather personnel) and half were independent research personnel from various physical science fields (science personnel).

Whereas age and job experience, low avocational activity need, and absence of delinquent history were found to be most highly related to good performance among military personnel in an earlier study, somewhat different results were obtained among civilian personnel. Age and experience were more important for the weather than for the science personnel, while education seemed of greater importance for the latter group. Neither past delinquent conduct nor need for avocational activity were related to performance among civilians in any systematic way. Size of hometown was related to performance in opposite directions for the two civilian groups.

The results when compared with those of the earlier study of military personnel from small station groups suggest the importance of predicting job performance among samples of persons who are reasonably homogeneous on occupational role characteristics.

Special
characteristicsPerformance
measures

Number of groups	-refer to no. 2	-biographical data compared with superior and peer evaluations of task work effort, social compatibility, and emotional composure
Group size or range 48		
Group composition 100% Civilians		
Length of study or mission 3 expeditions		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 26

Acc. No.:

AUTHOR: Pierce, C. M.; Shurley, J. T.; Natani, K.;
and Brooks, R. E.

Pub. Date: Summer 1967

AGENCY/COMPANY

Rept. No:

University of Oklahoma School of Medicine
Veterans Administration Hospital

TITLE: Sleep and Activity Patterns on the Antarctic Continent
Part I: Summer 1967

ABSTRACT:

As part of an extensive study into the psychophysiology of sleep in a stressful-exotic environment, it was decided to find out how much and when man slept in relation to other activities. A self report form was developed and used at a number of American and non-American bases in Antarctica.

The paper presents the findings from three bases (Pole and Plateau of the United States and Scott of New Zealand.) During a week period the men at these bases used the self report card. It was found that the men slept an average of 7 1/2 hours per day and worked 10 hours per day. During any day a man's activities are likely to be significantly different in relation to the time spent at the activity. This reflects the need for ongoing adjustment to the polar conditions.

This preliminary report suggests that important questions concerning man's adjustment relate to how much time he is obliged to be awake as well as when he sleeps, how long he sleeps and at what depths he sleeps.

		Special characteristics	Performance measures
Number of groups	6--data from 3 groups had been received at writing	-refer to No. 2	-self-reporting of activities every day for a week, four times per year.
Group size or range	8-30		
Group composition composition			
Length of study or mission	1 year		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 27

Acc. No.:

AUTHOR: Rohrer, J. H.

Pub. Date: September 1960

AGENCY/COMPANY Group Psychology Branch
 Office of Naval Research

Rept. No:

Contr. NONR 1530 (07)

TITLE: Human Adjustment to Antarctic Isolation

ABSTRACT: This report is concerned with a discussion of problems of human adjustment experienced by men who wintered over in the Antarctic. The data on which the discussion is based resulted from interviews with, and observations of, 163 men in the Antarctic. The three periods of initial heightened anxiety, long period of depression, and finally anticipatory behavior to the end of confinement are developed. Description of problem areas with relevant quotations are developed. Fourteen hypotheses were suggested for definitive study relative to sleeplessness, isolation, work opportunities, etc., in Antarctica.

		Special characteristics	Performance measures
Number of groups	2	- Refer to No. 2	- formal and informal interviewing
Group size or range	small-28		
Group composition			
Length of study or mission	1 year each (different years)		
Off-duty time requirements			
Off-duty time activities			

INDEX NO:28

Acc. No.:

AUTHOR: Rohrer, J. H.

Pub. Date: 1961

AGENCY/COMPANY

Rept. No:

TITLE: Interpersonal Relationships in Isolated Small Groups

Published: Psychophysiological Aspects of Space Flight, Flaherty, B. (ed.),
Columbia University Press

ABSTRACT: The chapter presents a review of the interpersonal relationships between individuals who have volunteered for duty in isolation for a definite period of time and where there is no possibility of receiving external assistance. It discusses the phasic nature of small, isolated groups, as being characterized initially by heightened anxiety followed by a settling down period during which there is felt depression by all members and finally, when individuals are about to leave isolation anticipatory behavior occurs characterized by affect expression, increase in aggressive behavior and a decrease in precision of working habits. Phenomena such as individual isolation, sleeplessness, sexual repression, oral gratification, and the tendency for leisure time activities to become simpler and more fundamental over time occur.

		Special characteristics	Performance measures
Number of groups		-isolated groups: people have volunteered for duty for definite period of time; no abort possibility; no assistance from external society	
Group size or range	5-24		
Group composition			
Length of study or mission			
Off-duty time requirements			
Off-duty time activities	-reminiscing -telling tall stories -doing things with hands		

INDEX NO: 29

Acc. No.: AD 647 188

AUTHOR: Shears, L. M. ; and Gunderson, E. K. E.

Pub. Date: September 1965

AGENCY/COMPANY

Rept. No: 65-11

Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Stable Attitude Factors in Natural Isolated Groups

ABSTRACT: Factor analysis was utilized to identify a small number of attitude dimensions which reflected important aspects of individual and group functioning at isolated Antarctic stations. Earlier analyses of two separate inventories administered twice during the winter period in two expeditions suggested the presence of three significant factors representing the concepts of social compatibility, personal motivation, and group accomplishment. Additional analyses with a new single inventory administered to 83 Navy and scientific Antarctic personnel on two occasions during the winter period confirmed the presence of essentially the same three factors and demonstrated their stability over time.

		Special characteristics	Performance measures
Number of groups	Phase I: unspecified Phase II: 6 stations Phase IV: 3	- Refer to No. 2	I: -2 inventories of group and individual functioning
Group size or range	Phase IV: 83 in all		II: -10 attitude scales
Group composition	Navy, Civilian (Volunteers)		assessment: -deterioration in harmony and efficiency
Length of study or mission	Phase I: 1 yr. (1957) Phase II: 2 yrs. Phase IV: 1 yr.		III: - re-analysis of data already obtained
Off-duty time requirements			IV: -67 item inventory -6 point scale -factor analysis
Off-duty time activities			

INDEX NO: 30

Acc. No.:

AUTHOR: Smith, W. M.

Pub. Date: 1961

AGENCY/COMPANY

Rept. No:

TITLE: Scientific Personnel in Antarctica: Their Recruitment,
Selection, and Performance

Published: Psychological Reports, Volume 9, 1961, pp. 113-182

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

Index Number	Author	Year	No. of Groups	Group Size Low-High	Composition						Length of Study Low-High	Off-Duty Time (minutes)	No. of ODT Activities	Abstract
					Civilian	Military	Officer	Enlisted	Pilots	Volunteers				
31	Bowen, H. M.	66	3	10 each							15 days			Yes
32	Kinsey, J. L.	53	1	23		X								Yes
33	Weybrew, B. B.	63						X						No
34	Weybrew, B. B.	57		30		X					11 days			Yes

INDEX NO: 31

Acc. No.: AD 630 518

AUTHOR: Bowen, H. M. ; Andersen, B. ; and Promisel, D.

Pub. Date: March 1966

AGENCY/COMPANY

Rept. No: SSD-66-296 (571)

Office of Naval Research
Washington, D. C.

Contract No: Nonr 4930 (00)

TITLE: Studies of Divers' Performance During the SEALAB II Project

ABSTRACT: Field studies of divers' performance during the SEALAB II project were undertaken by three teams of 10 men each who lived in and operated from an underwater habitat situated on the bottom at 205 feet. Performance under SEALAB conditions was compared to performance on dry land and to performance in shallow water (15 feet). The data suggests that performance on short-term, simple tasks suffers least impairment, while performance on larger term and more complex tasks suffers more impairment. The decrements in performance are attributed to the various stresses and hindrances of operating in the water rather than to any direct physiological effects (e. g. , narcosis) due to pressure or breathing medium. A conclusion from the vision test was that black targets under the conditions are most visible.

Individual differences among the divers were related to diving performance, and it was found that age and experience had no relation to diving activity. However, the men who indicated that they were least fearful and least aroused by the conditions did the most diving. Also, the men who, in the habitat, were helpful to their mates, gregarious in their social activities, and contacted the outside world least by telephone were most active in their diving.

		Special characteristics	Performance measures
Number of groups	3	-205 feet -performance compared with 15 feet and dry land	-visual test
Group size or range	10 each		-strength test
Group composition			-2-hand co-ordination
Length of study or mission	15 days		-group assembly test
Off-duty time requirements			-mental arithmetic
Off-duty time activities			Assessment: -performance decrement on all but arithmetic test

INDEX NO: 32

Acc. No.: AD 64665

AUTHOR: Kinsey, J. L.

Pub. Date: July 1953

AGENCY/COMPANY Navy Medical Research Laboratory
U. S. Naval Submarine Base
New London, Connecticut

Rept. No: MRL 230

TITLE: Report of Psychiatric Studies on Operation Hideout

ABSTRACT: Although the primary purpose of Operation Hideout was the completion of certain physiological studies, the situation provided a unique opportunity for study of psychiatric, psychological, and sociological aspects.

This report presents the results of the psychiatric studies. While there were no major psychiatric problems encountered during Operation Hideout, moderate increases in anxiety occurred which were apparently related to the situational factors involved. Individuals who revealed unstable personality factors during the pre-experiment psychiatric assessment had more severe and more prolonged subjective physical complaints. In general, the performance during Operation Hideout roughly correlated with predictions made from the pre-experiment assessment.

		Special characteristics	Performance measures
Number of groups	1	-closed ecological system	-personal self- evaluation -interviews
Group size or range	23		
Group composition	men; Navy		
Length of study or mission			
Off-duty time requirements	-recreational facilities should have been better		
Off-duty time activities			

INDEX NO: 33

Acc. No.:

AUTHOR: Weybrew, B. B.

Pub. Date: 1963

AGENCY/COMPANY

Rept. No:

TITLE: Psychological Problems of Prolonged Marine Submergence

Published: Chapter 4, Unusual Environments and Human Behavior, Burns, N. M.,
Chambers, R. M. and Hendler, E., (eds.), The Free Press of Glencoe

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 34

Acc. No.: AD 272611

AUTHOR: Weybrew, B. B.

Pub. Date: February 1957

AGENCY/COMPANY U. S. Naval Medical Research Laboratory
Bureau of Medicine and Surgery
Navy Department, Washington, D. C.

Rept. No: 281

Project No: NM 23 00 00

TITLE: Psychological and Psychophysiological Effects of
Long Periods of Submergence

ABSTRACT:

Thirty enlisted men from the crew of the NAUTILUS were measured daily during an 11-day completely submerged period to determine when, or if, any debilitating effects resulted from this period of submergence. Critical Flicker Frequency thresholds, Hand Tremor scores, heart and respiratory periods, and daily self-ratings on 28 fatigue-like variables were included in the measurement battery.

The data from each test, plotted by day submerged, suggest that optimal adaptation to the submerged conditions occurred during the first six days. From the 6th to 8th days, muscular tension increased and the proportion of individuals reporting insomnia, headaches, and lowered motivation also increased, thus suggesting less effective adaptation during this period. The data for the last two days indicated more effective adaptation; however, these results were considered spurious due to the "end spurt" previously observed in men living in confined environments for prolonged periods.

Special characteristics		Performance measures
Number of groups	-USS Nautilus	-visual sensitivity
Group size or range 30		-muscular tension
Group composition Navy enlisted		-heart and respiratory rates
Length of study or mission 11 days		-self-ratings on fatigue
Off-duty time requirements		Assessment
Off-duty time activities		-decrement after 6-8 days in adaptation to submergence

Index Number	Author	Year	No. of Groups	Group Size Low-High	Composition						Length of Study Low-High	Off-Duty Time (minutes)	No. of ODT Activities	Abstract
					Civilian	Military	Officer	Enlisted	Pilots	Volunteers				
35	Air Force	52		200 individual										Yes
36	Eilbert, L. R.	57		648 tested 213 interviewed										Yes
37	Hartman, B. O.	64	1	2							30 days		4	Yes
38	Ladds, J. E.	65												Yes
39	Lester, J. T. Jr.	65												Yes
40	Miller, D. C.	52	12	840 total			X	X						Yes
41	Reidy, J. J.	60	4	3-9; 20 total			X	X		X	9 months		3	Yes
42	Roby, T. E.	53	5				X		X					Yes

INDEX NO: 35

Acc. No.: AD 131 870

AUTHOR:

Pub. Date: 1952

AGENCY/COMPANY Department of the Air Force
 Air University
 Human Resources Research Institute
 Human Relations Division
 TITLE: Maxwell Air Force Base, Alabama

Rept. No: HR-10

Human Relations at A. C. & W. Sites
 III. Needs of Site Personnel

ABSTRACT:

Monotony characterizes off-duty time of Air Force Personnel at A. C. & W. sites. Needs expressed by Air Force men include, in order of importance: Recreation, Job and Career, Living Conditions, Transportation, and Leadership and Organization. Two approaches are suggested to meet these needs. Wise use of leisure time dictates increasing the opportunities for creative and divertive activities while minimizing the necessity and opportunity for disintegrative and illegal activities. One approach to improving A. C. & W. sites would be to aim toward creating the type of community depending upon available resources, which would give the highest level of performance. Another avenue toward site improvement would be to identify personnel who are "problem prone" or who do not adjust to life at the site. Only those who possess the capability of adjusting at sites would be selected for assignment.

	Special characteristics	Performance measures
Number of groups		
Group size 200 individuals or range		
Group composition		
Length of study or mission		
Off-duty time requirements	-recreational needs by far most mentioned	
Off-duty time activities	-creative and divertive	

INDEX NO: 36

Acc. No.: AD 134 241

AUTHOR: Eilbert, L. R.; Glaser, R.; and Hanes, R. M.

Pub. Date: July 1957

AGENCY/COMPANY Air Force Personnel & Training
Research Center
Lackland Air Force Base, Texas

Rept. No:

TITLE: Research on the Feasibility of Selection of Personnel
for Duty at Isolated Stations

ABSTRACT: In investigating criteria and variables for predicting personal adjustment to Arctic bases, the authors analyzed data from eight Arctic bases. Adjustment was defined as the ability to function in the isolated Arctic environment. Supervisory nominations were adopted as the criterion measure of adjustment. Based on the nominations of good and poor adjustment, two criterion groups comprising a "well adjusted" group of 112 men and a "poorly adjusted" group of 83 men were established. A series of measures was employed to determine the variables that differentiated the two criterion groups. The two groups were compared for differences in the general areas of personal background, personality characteristics, and medical complaints.

The findings of the study indicate that measures are available which can concurrently differentiate good and poor adjustment to an isolated Arctic environment. The variables which differentiated the criterion groups appear to be based on personality and background characteristics that may be on long standing and relatively independent of the conditions of Arctic isolation. Results of the study suggest that a man's history of adjustment may be the best predictor of his adjustment to an isolated Arctic environment.

Special
characteristics

Performance
measures

Number of groups	-eight Arctic bases	-feasibility of selection methods -supervisory nominations of adjustment
Group size 648 tested or range 213 interviewed		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 37

Acc. No.:

AUTHOR: Hartman, B. O. ; Flinn, D. E. ; Edmunds, A. B. ;
Brown, F. D. ; and Schubert, J. E.

Pub. Date: October 1964

AGENCY/COMPANY

Rept. No: SAM-TDR
64-62USAF School of Aerospace Medicine
Brooks Air Force Base, TexasTITLE: Human Factors Aspects of a 30-Day Extended Survivability Test of the
Minuteman Missile

ABSTRACT:

Two civilian subjects successfully completed 30 days of unbroken confinement in an underground Minuteman launch control center with an open-loop air supply. Logistic supplies were self-contained. During the test, they ate, slept, and performed duties similar to those that would be required of an operational crew in a postnuclear attack environment. Their performance score was high (99.75% level) with no critical errors. Morale throughout the test was excellent, with minimum of interpersonal friction. No physiologic or psychologic changes were observed which would compromise the integrity of the weapon system. Alterations in sleep patterns obtained were consistent with predictions based on work levels.

		Special characteristics	Performance measures
Number of groups	1	-underground Minute- man launch control center	-inspections -adjustment of facility mechanical equipment -diaries -sleep record -test records -cameras and micro- phones
Group size or range	2		
Group composition	civilians		
Length of study or mission	30 days		
Off-duty time requirements			Assessment: performance remained good
Off-duty time activities	-planned study -light reading -set goals to relieve boredom -solitaire		

serendipity associates
~~RESEARCH AND DEVELOPMENT DIVISION~~

INDEX NO: 38

Acc. No.: N65-33388

AUTHOR: Ladds, J. E.

Pub. Date: 1965

AGENCY/COMPANY Thesis, University of Nebraska
Department of Business Organization
and Management

Rept. No:

TITLE: A Study of Air Force Personnel Problems Associated
with Remote or Isolated Assignments

ABSTRACT: A review of the literature on personnel problems in remote isolated stations indicated that "Living conditions and recreational facilities are unsuitable at remote overseas station. The benefits derived by improving these facilities would probably be off-set by savings and training costs that would accrue from a higher retention rate. This would, in turn, relieve the tedium of monotony." The report suggests that the alleviation of monotony should be considered the responsibility of the Commander through constructive utilization of leisure time. The review indicated that most of the maladjustment in the remote sites related to dissatisfaction with the manner in which certain services were provided for the men and their families.

	Special characteristics	Performance measures
Number of groups	-AC &W sites studied	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements	-men complained of lack of recreational facilities	
Off-duty time activities		

INDEX NO: 39

Acc. No.: AD 619 531

AUTHOR: Lester, J. T., Jr.

Pub. Date: July 1965

AGENCY/COMPANY Group Psychology Branch
Office of Naval Research

Rept. No: TR #2

Contr. No. Nonr-4672(00)

TITLE: Behavioral Research During the 1963 American Mount
Everest Expedition: Acquaintance and Compatibility

ABSTRACT: The present report summarizes a second aspect of the behavioral research done on the 1963 American Mt. Everest Expedition, viz, a testing of hypotheses proposed by Theodore Newcomb concerning the processes through which emerge a set of stable relationships among a group of initial strangers.

On the whole the Newcomb hypotheses were supported. Results of the analysis relating scores on FIRO-B and FIRO-F to pair-attraction scores at 11 samplings provide little encouragement for the expectation that FIRO test scores can effectively predict emergent compatibility in situations resembling this one.

	Special characteristics	Performance measures
Number of groups	-use Newcomb hypothe- ses	-self-related compati- bility
Group size or range	-1963 Mt. Everest group	-test-predicted compati- bility
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 40

Acc. No.: AD 131931

AUTHOR: Miller, D. C.

Pub. Date: 1952

AGENCY/COMPANY Air University
Human Resources Research Institute
Human Relations Research Directorate
Maxwell Air Force Base, Alabama

Rept. No: HR-9

TITLE:
Human Relations At A. C. & W. Sites
Part II: Personnel Problems

ABSTRACT: The Air Force man in A C & W sites who feels the heaviest stress of personnel problems is the single man at the lower levels of his grade. This is true whether the man is a commissioned officer, a non-commissioned officer, or an airman. His stress is more intense if he is stationed at an isolated site. Personnel problems are greatest in isolated sites for the areas of Transportation, Recreation, on and off Site, and Living Conditions off Site. Problems of Leadership are least at isolated sites. At non-isolated sites the Promotion problem looms greatest. Of relative similar intensity, regardless of isolation, are problems of Civilian Career, Job Classification, Job Dissatisfaction, Job Assignment, Extra Duties, and G. I. Regulations.

These findings result from questionnaires given to a sample of officers and airmen at 12 Aircraft Control Warning Stations of the 25th Air Division, Air Defense Command. Wide differences were found between sites in the seriousness of these problems. For example, 15 per cent of the men at one site thought Recreation was a very serious problem but as many as 75 per cent of the men at another site thought it to be serious.

		Special characteristics	Performance measures
Number of groups	12		-questionnaires
Group size or range	840		
Group composition	officers and enlisted men		
Length of study or mission			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 41

Acc. No.: AD 294 087

AUTHOR: Reidy, J. J.

Pub. Date: January 1960

AGENCY/COMPANY Alaskan Air Command
Arctic Aeromedical Laboratory
Ladd Air Force Base, Alaska

Rept. No: TR-59-9

TITLE: Fletcher's Ice Island: A Psychiatric Report

ABSTRACT:

A study of the first 9 months of the occupancy of Fletcher's Ice Island was conducted by interviews with men stationed there and supporting personnel, together with a visit by the author to the island. In general, qualified personnel were selected for duty there, and they adjusted well except for two members. Research in the Polar regions is now carried out under circumstances which differ greatly from those prevailing during the classic exploratory expeditions. Procedures for the selection and indoctrination of personnel should be formulated in the light of present day conditions. With the introduction of recreational outlets, reading, playing cards, and movies once a week, interpersonal relations of the men increased and the impact of two poorly adjusted members was lessened.

	Special characteristics	Performance measures
Number of groups	4	-daily radio contact
Group size or range	3 to 9 20 total	
Group composition	Volunteers except two	
Length of study or mission	9 months	
Off-duty time requirements		
Off-duty time activities	-reading -cards -movies	

INDEX NO: 42

Acc. No.:

AUTHOR: Roby, T. E.

Pub. Date: November 1953

AGENCY/COMPANY 6565th Research and Development Group
 Human Resources Research Center
 Air Research and Development Command
 Randolph Air Force Base, Texas

Rept. No: 53-41

Project No.: 511-023-0002

TITLE:

Relationships Between Sociometric Measures
 and Performance in Medium-Bomber Crews

ABSTRACT: The general purpose of this study was to determine whether sociometric ratings among aircrew members relate significantly to their performance on training missions. Three levels of analysis were investigated: (a) the relationship between individual sociometric "status" and individual performance measures; (b) the relationship between the ratings of one member of a crew-position pair for the other and their joint coordination rating; (3) the mean intracrew sociometric rating and crew performance measures.

In all cases, small but significant positive correlations are obtained. Two alternative explanations are invoked. The first attributes the positive results to consistent and specific interpersonal behaviors; the second explanation attributes the results to a generalized motivational effect.

Finally, the study is seen as lending preliminary justifications to the use of personal liking measures as interim criteria for operations aimed at the rational assembly of bomber crews.

Special characteristics		Performance measures
Number of groups	5	-sociometric questionnaire -peer ratings -performance ratings (instructor ratings)
Group size or range		
Group composition	bomber crew members	
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

[illegible]

INDEX NO: 43

Acc. No.:

AUTHOR: Berry, C. A. ; Coons, C. O. ; Catterson, A. D. ;
and Kelly, G. F.

Pub. Date: 1966

AGENCY/COMPANY

Rept. No: NASA SP-121

National Aeronautics and Space Administration
Manned Spacecraft Center
Houston, Texas

TITLE:

Man's Response to Long Duration Flight in the Gemini Spacecraft

Published in: Gemini Midprogram Conference, Houston, Texas, 1966

ABSTRACT:

		Special characteristics	Performance measures
Number of groups	3	-3 Gemini flights -sleep data on the 14-day Gemini VII flight	-sleep difficulty on 4-day and 8-day missions -14-day; a little irritable last 2 days
Group size or range	2		
Group composition	astronauts		
Length of study or mission	4 days 8 days 14 days		Assessment: -no performance decre- ment
Off-duty time requirements			
Off-duty time activities			

Index Number	Author	Year	No. of Groups	Group Size Low-High	Composition						Length of Study Low-High	Off-Duty Time (minutes)	No. of ODT Activities	Abstract
46	Brower, J. D.	64	1	6	X						1 year	60	11	No
47	Jones, A. L.	64		3-10							10-600 days		9	No
48	Martin, B. P.	64		3-12							300-1000 days			No
49	Mathews, C. W.	63		6-12							over 1 year			No
50	McKay, L. M.	65		6-14							1,000 days	72		No
51	Moran, J. A. Phase I	64		3		X					3 days	60	2	Yes
	Phase II	64		8		X					10 days	60	2	Yes
	Phase III	64		21							30 days minimum	60	2	Yes
52	Price, H. E.	65		3-15							450-510 days	210	8	No
53	Price, H. E.	65		3-15							450-510 days	210	8	No
54	Ragsac, R. V.	63		3							365 and 600 days	114	6	No
55	Boeing Company	65		3-12							460-670 days		8	No

INDEX NO: 46

Acc. No.:

AUTHOR: Brower, J. D.

Pub. Date: Sept. 1964

AGENCY/COMPANY Douglas Aircraft Company, Inc.

Rept. No: SM-46075

Contract No. NAS 1-3612

TITLE: Report on the Optimization of the Manned Orbital
Research Laboratory (MORL) System Concept
Vol. IV Systems Analysis - Flight Crew

ABSTRACT:

		Special characteristics	Performance measures
Number of groups	1	<ul style="list-style-type: none"> -closed ecological system -laboratory facility -abort possibility -supply ships periodically 	
Group size or range	6		
Group composition	3 engineers (crew) 3 scientists		
Length of study or mission	rotating tours of duty 12 months maximum		
Off-duty time requirements	-1 hour per day -required to relieve stress	Additional Off-duty time activities include: <ul style="list-style-type: none"> -cards -model building -electrical-electronic equipment -musical instruments 	
Off-duty time activities	<ul style="list-style-type: none"> -games -discussions -meetings -celebrations -microfilm library -writing -movies 		

INDEX NO: 44

Acc. No.:

AUTHOR: Jones, E. R.; Prince, A. I.

Pub. Date: February 1964

AGENCY/COMPANY McDonnell Aircraft Corporation
St. Louis, Missouri

Rept. No: A-507

TITLE:
Man's Function in Military Space Systems:
Part 1. General Considerations

ABSTRACT:

This report considers some of the major problems of specifying man's role in space and the constraints of the space environment, particularly in the military context. These constraints include spacecraft volume, crew size, crew productivity, and the performance aspects of radiation and weightlessness.

Laboratory studies have shown that a monotonous environment, limitations on movement, and repetitious motor tasks have effects similar to fatigue and sleep loss. These can be counteracted for short missions (up to 30 days) by good cabin design, adequate space per man, and rotation of crew tasks.

This paper includes valuable tables and graphs, and a comprehensive appendix summarizing the findings in 37 studies.

	Special characteristics	Performance measures
Number of groups	Sleep: -refer to Mercury and Vostok findings suggesting less sleep required in weightless environment -excellent summary review of behavioral implications of confinement relative to spacecraft design	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 45

Acc. No.:

AUTHOR: Strughold, H.

Pub. Date:

AGENCY/COMPANY Aerospace Medical Division (AFSC)
United States Air Force
Brooks Air Force Base, Texas

Rept. No:

TITLE: The Physiological Clock in Aeronautics and Astronautics

Published: Annals New York Academy of Sciences, pp. 413-422

ABSTRACT: The author discusses the diurnal cycle, physiological clock, and their influence on astronauts. Sleep patterns of both American and Russian astronauts are presented. The possibilities of considering variation in sleep and wakefulness time patterns on the Moon or in interplanetary flight are discussed along with the advisability of having a free running cycle as opposed to the Circadian cycle of 24 hours. He indicates that 5-8 hours of sleep would be required every 24 hours.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 47

Acc. No.: 60529-64

AUTHOR: Jones, A. L.; and McRae, W. V.

Pub. Date: April 1964

AGENCY/COMPANY North American Aviation, Inc.
Space and Information Systems Division

Rept. No: SID 64-619-3

Contract No: NAS-2-1408

TITLE: Manned Mars Landing and Return Mission Study
Volume No. 3

ABSTRACT:

Special characteristics		Performance measures
Number of groups	<ul style="list-style-type: none">-closed ecological system-Mars landing	
Group size or range 3-10		
Group composition		
Length of study or mission 10-600 days		
Off-duty time requirements		
Off-duty time activities <ul style="list-style-type: none">-music-religious activities-reading-games-puzzles-hobbies	<p>Additional off-duty time activities included:</p> <ul style="list-style-type: none">-communicate with family on Earth-get news from Earth-use of drugs, hypnosis and auto-suggestion techniques	

INDEX NO: 48

AUTHOR: Martin, B. P., et al.

AGENCY/COMPANY George C. Marshall Space Flight Center
Huntsville, Alabama

TITLE: Manned Interplanetary Missions
Follow-On Study Final Report
Volume 2-Part A

Acc. No.:

Pub. Date: February 1964

Rept. No: 8-32-64-1

Contract No: NAS8-5024

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-Mars and Venus fly-by	
Group size or range 3-12		
Group composition		
Length of study or mission 300-1000		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 49

Acc. No.: A63 19727

AUTHOR: Mathews, C. W.; and Olling, E. H.

Pub. Date: May 2, 1963

AGENCY/COMPANY

American Institute of Aeronautics and Astronautics
and Aerospace Medical Association
Manned Space Laboratory Conference

Rept. No: 63 132

TITLE: Los Angeles, California

A Multipurpose, Manned, Orbital Space Station

ABSTRACT:

Special characteristics		Performance measures
Number of groups		
Group size or range	6-12	
Group composition		
Length of study or mission	over 1 year	
Off-duty time requirements		
Off-duty time activities		

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INDEX NO: 50

Acc. No.: X65-17107

AUTHOR: McKay, L. M.; and Wall, J. K.

Pub. Date: 1965

AGENCY/COMPANY Douglas Aircraft Corporation

Rept. No:

TITLE: Conjunction Class, Manned Mars Trip, Mid-term Progress Briefing

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-Mars landing	
Group size or range 6 minimum 14 maximum		
Group composition composition		
Length of study or mission 1000 days (500 days in Mars orbit)		
Off-duty time requirements		
Recreation: 1.5 hours Off-duty time (Also suggest 3 hours) activities		

INDEX NO: 51

Acc. No.: AD 452 187

AUTHOR: Moran, J. A. ; and Tiller, P. R.

Pub. Date: July 1964

AGENCY/COMPANY Space and Information Systems Division
 North American Aviation, Inc.
 Downey, California

Rept. No: FDL-TDR-64-86

Contract No: AF 33(615)-1297

TITLE: Investigation of Aerospace Vehicle Crew Station Criteria

ABSTRACT:

This report presents an analysis of the crew station design criteria for three types of space vehicles. As defined in this report they are (1) a vertical launch, horizontal landing low orbital vehicle, (250-300 nautical miles) manned by a crew of three and designed for reconnaissance and surveillance; (2) a horizontal launched, horizontal landing, high orbit (19,350 miles) vehicle, manned by a crew of three and capable of supporting five passengers over a 10 day period; (3) a nonrecoverable low orbital (250-300 nautical miles) space station capable of supporting a crew of 21 men for a minimum period of 30 days. Recommendations are made in the design of mission oriented stations and life support stations. Methods of validating the recommendation are given along with the suggestion of typical experiments and facilities that could be used as a major segment of the validating procedure. As a result of this research, study areas wherein further research would be beneficial to the establishment of crew station criteria have been identified.

	Special characteristics	Performance measures
Number of groups	-closed ecological system	
Group size I: 3 or range II: 8 III: 21	-3 types of vehicles studied	
Group composition I: 3 crew II: 3 crew, 5 passenger III: unspecified		
Length of study I: 3 days or mission II: 10 days III: at least 30 days		
Off-duty time requirements	-leisure activities include human support and sleep -1 hour per day for recreation	
Off-duty time activities	-reading -games	

Serendipity associates
NEW HAVEN, CONNECTICUT 06511

INDEX NO: 52

Acc. No.:

AUTHOR: Price, H. E.; et al.

Pub. Date: August 1965

AGENCY/COMPANY Serendipity Associates
Chatsworth, California
Aerojet-General Corporation
Azusa, California

Rept. No:

Contr. No. NAS2-2419

TITLE:
Final Report of a Study of Crew Functions and Vehicle
Habitability Requirements for Long Duration Manned
Space Flights, Volume II, Technical Program

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	-Mars landing -closed ecological system	
Group size or range 3-15		
Group composition composition		
Length of study 450-510 (on Mars or mission 0-60 days)		
Off-duty time -2.5 hours per day requirements		
Off-duty time activities	-games -movies -books -television from Earth -conversations with family and friends -tape of music -recording voice -personal diaries	

INDEX NO: 53

Acc. No.:

AUTHOR: Price, H. E.; et al.

Pub. Date: August 1965

AGENCY/COMPANY Serendipity Associates
 Chatsworth, California
 Aerojet-General Corporation
 Azusa, California

Rept. No:

Contract No. : NAS2-2419

TITLE: Final Report of a Study of Crew Functions and Vehicle
 Habitability Requirements for Long Duration Manned
 Space Flights, Volume III, Technical Appendices

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	-presents activity analysis of operational, maintenance, scientific, and human support missions	
Group size 3-15 or range		
Group composition		
Length of study 450-510 (on Mars or mission 0-60 days)		
Off-duty time -2.5 hours per day requirements		
Off-duty time -games activities -movies -books -television from Earth -conversations with family and friends -tape of music -recording voice -personal diaries		

INDEX NO: 54

Acc. No.:

AUTHOR: Ragsac, R. V. ; McLaughlin, J. F. ; Vliet, G. C. ; et. al. Pub. Date: March 1963

AGENCY/COMPANY Lockheed Missiles & Space Company
Lockheed Aircraft Corporation
Sunnyvale, California

Rept. No: 8-32-63-1

Contract No: NAS8-5024

TITLE: Manned Interplanetary Mission Study
Summary Report--Volume 1

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	-EMPIRE mission study	
Group size or range 3		
Group composition		
Length of study or mission 365 and 600 days		
Off-duty time requirements -no two crew members have recreation at same time -1.9 hours per day		
Off-duty time activities -individual training -recorded music -movies -microfilmed books -personal diaries -games		

INDEX NO: 55

Acc. No.:

AUTHOR:

Pub. Date: May 1965

AGENCY/COMPANY Aero-Space Division
The Boeing Company
Seattle, Washington

Rept. No: D2-23588-5

Contract No: NAS9-3441

TITLE: Study of Interplanetary Mission Support Requirements

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	-analysis of previous design studies -Mars fly-by - Venus capture - Mars capture/landing	
Group size or range 3-12		
Group composition		
Length of study 460-670 days or mission		
Off-duty time requirements		
Off-duty time activities	-reading -music -movies -training aids -games -cards -chess -checkers	

INDEX NO: 57

Acc. No.: N65 20095

AUTHOR: Andreyev, V.

Pub. Date: March 1965

AGENCY/COMPANY Joint Publications Research Service
Building Tempo E
Adams Drive, 4th and 6th Streets, S. W.
Washington, D. C. 20443

Rept. No: TT: 65-30551

TITLE:

Medical and Psychological Problems in Long Space Flights

Translated from: Krasnaya zvezda (Red Star), Moscow, December 1964

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 58

Acc. No.: AD 457791

AUTHOR: Celentano, J. T.; Amorelli, D.; and Freeman, G. G. Pub. Date: February 1963

AGENCY/COMPANY North American Aviation, Inc.

Rept. No: Pub. 543-U
 NEW 5-63

TITLE:

Establishing a Habitability Index For Space Stations and Planetary Bases

ABSTRACT:

Satisfaction of the physiological needs are the prime requisites for assuring man's performance in a short-duration mission. Many authorities feel that longer-duration missions will require essentially only an increase in requirements proportional to the length of the mission, based upon short term figures. The authors contend, on the other hand, that long-duration stays in space may require much more elaborate provisions for assuring the upkeep of morals and performance. This paper establishes the essential habitability needs that allow man to perform for long periods of time. An evaluation of studies concerning habitability requirements is made. The important periods of habitability are discussed, and an habitability index will be established. An hypothetical mission is used as an example, showing the length of stay as a function of payload weights, and habitability features through the use of an habitability index.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements	-4-8 hours of free time suggested	
Off-duty time activities	-movies, radio, read- ing, television, hobbies, writing	

[illegible]

INDEX NO: 56

Acc. No.:

AUTHOR: Agadzhanyan, N. A. ; Bizin, Y. P. ; Doronin, G. P. ;
Il'in, Y. A. ; Kuznetsov, A. G. ; and Yezepchuk, N. I.
AGENCY/COMPANY

Pub. Date: 1965

Rept. No: TT f-368

TITLE: Effect on the Human Organism of Prolonged Confinement
in a Small Hermetically Sealed Chamber

Published: Problems of Space Biology, Vol. 4, USSR Academy of Sciences Publishing
House, Moscow

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-physiological and psychological considerations	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 59

Acc. No.: AD 275830

AUTHOR: Chambers, R. M.

Pub. Date: April 1962

AGENCY/COMPANY Bureau of Medicine and Surgery
U. S. Naval Air Development Center
Johnsville, Pennsylvania

Rept. No: NADC-MA-
6145

TITLE: Problems and Research in Space Psychology

ABSTRACT: This monograph attempts a systematic review of the scientific literature on the psychological aspects of space flight. The objectives of the survey were: (1) to identify some of the psychological requirements for man in space, (2) to identify some of the psychologically adverse environments characteristic of space flight, (3) to review experiments on the abilities and capabilities of man in these environments, and (4) to review some of the ways in which psychological principles are being used to improve the reliability of man for serving as a functional component within manned space systems. The primary psychological areas in which problems are reviewed are: (1) sensing and perceiving, (2) perceptual and motor skill performance, (3) cognitive processes and other higher mental abilities, (4) personality and emotional behavior, (5) psychological aspects of astronaut selection, and (6) psychological conditioning and training. The first five are basic research areas involving the abilities and capabilities of man in space environments. The last two are more concerned with the application of psychological principles to improve man's performance during exposure to these conditions.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 60

Acc. No.: AD 649 881

AUTHOR: Chiles, W. D.

Pub. Date: Dec. 1966

AGENCY/COMPANY Aerospace Medical Research Laboratories
Wright-Patterson Air Force Base, OhioRept. No: AMRL-TR-
66-192TITLE: Assessment of the Performance Effects of the
Stresses of Space Flight

ABSTRACT:

The performance capabilities of the aerospace vehicle operator must be measured so that the possible deleterious effects of the space environment can be detected at the earliest possible point in a space mission. The information obtained from such measures can also be used to delineate the quality of man's contribution to system effectiveness and the data may also be generalizable to other potential space vehicle missions. It is argued that optimal generality and sensitivity of such performance measures will result from the use of a synthetic task complex. This complex should require the operator to time-share among tasks representative of the psychological functions to be exercised by the man in the kinds of systems to which generalizations are to be made. The criteria to be met by such tasks are listed, and a particular synthetic task complex is described. Some evidence regarding the sensitivity of these tasks to changes in operator functioning is offered.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 61

Acc. No.: AD 453 500

AUTHOR: Christensen, J. M.

Pub. Date: August 1964

AGENCY/COMPANY

Rept. No:

TITLE:

The Measurement of General Human Performance in Military Space Systems

Published: Transactions of the Ninth Symposium on Ballistic Missile and Space Technology, Vol. 1, U. S. Naval Training Center, San Diego, pp. 493-540

ABSTRACT:

It is suggested that the astronaut of the near future will serve as: a functional subsystem, a scientific observer, and a scientific subject. The importance of integrating man and machine so as to maximize systems effectiveness is stressed. The assessment of human performance as it relates to space operations is viewed as a continuum that begins in the ground laboratory, includes tests in zero-gravity aircraft, and culminates with tests in space vehicles. Because the latter tests are so expensive, it is mandatory that great care be exercised in selecting what aspects of human performance to measure in space and how to measure them. Suggestions for doing this are made.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 62

Acc. No.: AD 423442

AUTHOR: Christensen, Julien M.

Pub. Date: September 1963

AGENCY/COMPANY Behavioral Sciences Laboratory
6570th Aerospace Medical Research Laboratories
Aerospace Medical Division
Air Force Systems Command

Rept. No: AMRL-TDR-
63-81

TITLE: Wright-Patterson Air Force Base, Ohio

Psychological Aspects of Extended Manned Space Flight

ABSTRACT:

This paper discusses the psychological aspects of a projected manned Mars Mission. Author mentions problems of isolation and confinement but points out that while the crew will be physically confined, it will not be mentally confined nor will it be isolated. The crew will not suffer stimulus impoverishment. He notes that the crew will be highly motivated and will have had previous experience in difficult and even hazardous tasks. Elements of boredom will occur with thorough knowledge of the various tasks, and the challenge is to design a system that will require and use crew members in essential jobs, challenging enough to prevent monotony and boredom, yet sufficiently below maximum level of capability to allow for possible performance deterioration or for emergencies. Jobs, however, must not entail performance of sham tasks that are included simply to keep crew busy.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 63

Acc. No.: A66-25280

AUTHOR: Dunlap, R. D.

Pub. Date: March 1966

AGENCY/COMPANY Douglas Aircraft Company

Rept. No:

TITLE: Psychology and the Crew on Mars Mission

Published in: Stepping Stones to Mars Meeting, Baltimore, Maryland, March 28-30, American Institute of Aeronautics and Astronautics, and American Astronautical Society

ABSTRACT: Man can be stressed by psychological and sociological stressors, but to date almost all of the man-in-space effort has been directed toward physical and physiological stressors. The psychological and sociological stressors, while no doubt present, have not proved to be serious during the current short duration near-Earth missions. However, the long duration of a Mars mission, the great distance the crew will be from the vicinity of Earth, the vastness and hostility of outer space, and man's lack of knowledge about outer space are factors which make it unwise to extrapolate from our current experiences and predict that psychological and sociological stressors will not seriously affect the probability of mission success. Reducing sensory stimulation, isolation, confinement, and small-group living may generate more stress than has currently been evident, particularly if thresholds of tolerance are lowered by time and other stressors, such as weightlessness, ionizing radiation, and atmospheric contaminants. For Mars missions more attention should be directed toward selecting the crew for ability to withstand psychological and sociological stresses and toward providing training in understanding and counteracting such stresses.

Special
characteristics

Performance
measures

Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

serendipity associates

INDEX NO: 64

Acc. No.:

AUTHOR: Fraser, T. M.

Pub. Date: June 1965

AGENCY/COMPANY Department of Aerospace Medicine and
Bioastronautics, Lovelace Foundation
for Medical Education and Research,
Albuquerque, New Mexico

Rept. No: VI
Contract No: NASr-115

TITLE: The Effects of Confinement on Man

ABSTRACT: The nature of confinement is discussed in relation to isolation and sensory deprivation. The operational and experimental experience of confinement is then tabulated in terms of conditions, subjects, available volume, and significant findings. The response of man to confinement is examined with respect to the psychological and the physiological effects. Excluding as much as possible the elements of sensory deprivation and isolation the psychological response is shown to be manifested in the form of subjective emotional reactions, discomfort and rarely, perceptual aberration. Performance decrement is relatively slight. The physiological response is seen to be one of non-specific reaction to stress accompanied by specific changes (e.g., cardiovascular deconditioning) attributable to the reduced mobility. There is a suggestion that some adaptation breaks down after a total of about 60 days. Tolerance to confinement is discussed and tolerance curves are presented indicating a threshold of acceptable tolerance, a threshold of unacceptable tolerance, and an intermediate zone. Tolerance is modified by habitability, work, rest, recreation, and exercise schedules. Recommendations for further studies are included. An extensive annotated bibliography with 103 entries is included.

Special
characteristics

Performance
measures

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 65

Acc. No.:

AUTHOR: Hartman, B. O.; Flinn, D. E.

Pub. Date: February 1964

AGENCY/COMPANY

USAF School of Aerospace Medicine
Brooks AFB, Texas

Rept. No:

TITLE: Crew Structures in Future Space Missions

ABSTRACT:

The paper analyzes job requirements and crew number in space situations and provides a very good review of the small group literature. It also describes some space cabin studies with the SAM simulator, including four-man simulated space flights. Concludes that, despite minor irritations, well motivated crew members are capable of supressing antagonistic feelings in the interest of mission completion, and continue to function without adverse effect upon performance. Although interpersonal problems may occur in a small crew as mission time is extended, it appears likely that any such problems will not be of major magnitude. As crews become larger, even brief missions may result in interpersonal problems.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

serendipity associates

INDEX NO: 66

Acc. No.:

AUTHOR: Hauty, G. T.

Pub. Date: 1964

AGENCY/COMPANY

Rept. No:

TITLE: Psychophysiological Problems in Space Flight

Published: Bioastronautics, The MacMillan Company

ABSTRACT: Problems of weightlessness, vigilance, and sensory deprivation were reviewed and discussed. These problems were related to the reliability requirements of advanced space systems designed for extended operations.

	Special characteristics	Performance measures
Number of groups	-several studies reviewed	
Group size or range		
Group composition composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 67

Acc. No.:

AUTHOR: Huddleston, H. F.

Pub. Date: 1964

AGENCY/COMPANY

Rept. No:

TITLE: Psychological Research in Space Flight

Published: Spaceflight, Vol. VI, No. 6, 189-192

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-table of specific space flights and respective psychophysiological data	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

serendipity associates

INDEX NO: 68

Acc. No.:

AUTHOR: Kendrick, J. B., Ed.

Pub. Date: 1967

AGENCY/COMPANY TRW Systems Group
One Space Park
Redondo Beach, California

Rept. No:

TITLE: TRW Space Data

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-gives data on estimating communication capabilities for interplanetary space travel	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

Number of groups	
Group size or range	
Group composition	
Length of study or mission	
Off-duty time requirements	-programmed variation in stimuli needed -recreation is critical for maintaining ego integrity
Off-duty time activities	

serendipity associates

INDEX NO: 70

AUTHOR: Lebedev, V.; and Kuznetsov, O.

AGENCY/COMPANY

Acc. No.: N65 17304
TT65 30405

Pub. Date: February 1965

Rept. No:

TITLE: Coping with Silence in Outer Space

Published: Aviatsiya i Kosmonavtika, Ekstrenyy Vypusk
(Aviation and Cosmonautics, a special issue)

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-Subjects in isolated, sensorily deprived condition	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements	Activities for subjects in experiment: -paper, colored pencils -wooden blocks -scissors	
Cosmonauts: -colored movies Off-duty time -taped music activities -read books (micro-filmed) -radio and television -"visit" theaters, sports events		

INDEX NO: 71

Acc. No.:

AUTHOR: Parin, Vassily

Pub. Date:

AGENCY/COMPANY Source of the article is unknown; however, Rept. No:
the articles reviewed were presented at the Eighteenth
International Psychological Congress, Moscow, U. S. S. R.

TITLE: Studying Space Psychology in USSR

ABSTRACT:

The author reviews six Soviet studies of the psychic reactions and state of man under conditions of long flights, in orbit flights of other celestial bodies, and during his stay on their surface. The scientists examined problems of weightlessness, diurnal rhythms and working routines, and selection and training of candidates.

	Special characteristics	Performance measures
Number of groups	-weightlessness -routines -diurnal rhythms -reactions of anticipations -selection and training	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

serendipity associates

INDEX NO: 72

Acc. No.:

AUTHOR: Parker, G. W. ; and Ord, J. W.

Pub. Date: Sept. - Oct. 1965

AGENCY/COMPANY

Rept. No:

TITLE: Human Adaptability to Military Space Systems

Published: Air University Review, Vol. XVI, No. 6, pp. 29-40

ABSTRACT: The authors reach several conclusions (1) Decisions concerning the utility of man in space systems should be made on the basis of overall systems considerations (economic, operational, etc.), disregarding problems associated with man himself. (2) Once the decision to use man is made, we must determine how effective the biomedical support (i. e., sealed environment) is. (3) Deviations from the shirt-sleeve environment must be considered in terms of duration and quality of productive work. All personal protective gear must be viewed first as encumbrances that cost in both duration and quality of work. (4) Having achieved the necessary compromises between biomedical and system requirements, we can proceed with only minor adjustments for psychological problems. Within the limits of point (3), performance during the flight is probably already nearly 100 per cent ensured. At this point the problems remaining are the biomedical disturbances which occur on blast-off, injection, and re-entry. Strategic regrouping of biomedical capabilities should enable us to solve most of these problem areas. It is the conviction of the authors that man is the essential feature of a military space system and that, as such, he must be incorporated into oncoming space devices. It is vital to stress biomedical experimentation even more than mission capabilities. Only by the process of data accumulation and analysis may problems be solved, countermeasures developed, and man adapted to his machine.

Special
characteristics

Performance
measures

Number of groups		
Group size or range		
Group composition composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 73

Acc. No.: N66 30798

AUTHOR: Sells, S. B.

Pub. Date:

AGENCY/COMPANY Institute of Behavioral Research
 Texas Christian University
 Fort Worth, Texas

Rept. No: NASA CR 76330

Contract No.: NGR-
 009-008

TITLE: A Model for the Social System for the Multiman Extended Duration Space Ship

ABSTRACT: The conditions of isolation, confinement, and other stresses to which extended duration space crews will be exposed are unprecedented and many of the problems are not yet understood. Hypotheses directed toward principles to optimize crew organization and adaptation must be generated from present knowledge. Extrapolations might be attempted from various literature sources of human experience in extreme situations. However, the appropriateness of such generalization depends on the system similarity of the various situational contexts to that of the spaceship. A model social system for such microsocieties was constructed and system profiles of eleven well known system patterns were compared with that postulated for the extended duration spaceship. Greatest similarity was found for submarines, exploration parties, naval ships and bomber crews, and least for shipwrecks and disasters, industrial work groups, and prison groups.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 74

Acc. No.:

AUTHOR: Solomon, P.

Pub. Date: 1961

AGENCY/COMPANY

Rept. No:

TITLE:

Motivations and Emotional Reactions in Early Space Flight

Published: Psychophysiological Aspects of Space Flight, Columbia University Press

ABSTRACT:

Because of potentially dangerous emotional reactions, planning for space flight should include psychiatric appraisal and experiences in standard sensory deprivation situations as part of the screening procedure. Every effort should be made to keep the voyager in constant communication with scientific monitors on Earth as well as family and friends. Every precaution should be taken to avoid the insidious dangers of inactivity, monotony and boredom. Emphasis should be placed on the fact that most troubles of the off Earth may be caused by lack of companions.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities	-reminiscing -telling tall stories -doing things with the hands	

Index Number	Author	Year	No. of Groups	Group Size	Composition						Length of Study	Off-Duty Time (minutes)	No. of ODT Activities	Abstract
					Civilian	Military	Officer	Enlisted	Pilots	Volunteers				
77	Boeing Company MESA I:	64	1	5							4 days	120	1	Yes
	MESA II:	64	1	5							30 days	120		Yes
78	Burns, N. M.	61		6		X				X	8 days			Yes
79	Burns, N. M.	60		6						X	8 days			Yes
80	Coburn, K. R.	67	2	6 subjects 2 controls		X	X		X		34 days			Yes
81	Cramer, E. H.	63	8	2					X		17-30 days		3	Yes
82	Flinn, D. E.	61	4	2							14-30 days			Yes
83	Gorbov, F. D.	64		1							10-15 days			No
84	Grodsky, M. A.	62	1	4					X		3.5-7 days		2	Yes
85	Hagen, D. G.	61	1	2		X			X		30 days			Yes
86	Hanna, T. D.	67	1	6		X			X		34 days			No
87	Hanna, T. D.	63		6 individuals						X	4-24 hours			Yes
88	Hartman, B.	62	4	2							17 days			Yes
89	Hauty, G. T. Phase I:	63		1					X		7 days			Yes
	Phase II:	63		1							30 hours			Yes
90	Mallick, B. L.	63	1	3					X		3.5-7 days		1	Yes
91	Patton, R. M.	63	1	2							7 days			Yes
92	Patton, R. M.	63	1	2							7 days			Yes
93	Peters, J.	63	2	29-33	X	X				X				Yes
94	Rathert, G. A.	64	1	2	X				X		7 days			Yes

[illegible]

INDEX NO: 75

AUTHOR: Webb, P. ed.

AGENCY/COMPANY Webb Associates
Yellow Springs, Ohio

TITLE: Bioastronautics Data Book

Acc. No.:

Pub. Date: 1964

Rept. No:

Contract No. NASA SP-3006

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	<ul style="list-style-type: none">- toxicology- weightlessness- food- size and motion	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 76

Acc. No.: AD63-18656

AUTHOR: White, S. C.; and Reed, J. H.

Pub. Date: May 1963

AGENCY/COMPANY Manned Spacecraft Center
National Aeronautics and Space Administration
Houston, Texas

Rept. No:

TITLE: Habitability in Space Stations

ABSTRACT:

Habitability is considered to be the resultant of the interplay of all of the factors related to man, his machine, his environment, and the mission to be accomplished. Design and development of a space vehicle should avoid depending upon a special selection and unusual training to meet the basic provisions needed to support man in the space environment. Vehicle provisions should stand on their own merit. Habitability is dependent upon the nature and duration of mission, crew size. The authors discuss, in a very general manner, work cycles, sleep, relaxation, and diet.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 77

Acc. No.:

AUTHOR: The Boeing Company

Pub. Date: November 1964

AGENCY/COMPANY The Boeing Company
Seattle, Washington

Rept. No: NASA CR-134

Contract No: NASw-658

TITLE: Manned Environmental System Assessment

ABSTRACT:

The study was primarily related to testing life support systems; however, in MESA II there was a 30-day confinement in which there was some time scheduled for off-duty time or recreation as called for in the program. However, in only one instance did any two subjects have the same R&R time schedule in a 24-hour period. According to Seward Smith, the psychologist on the program, most of the off-duty times evolved into solving the equipment problems within the environmental simulator, and the only off-duty equipment was those things that the subjects brought into the chamber, which remained unspecified. Each of the subjects was allotted two hours of recreation time per day. However, based upon personal communication it appeared to be used for things other than recreation.

		Special characteristics	Performance measures
Number of groups	MESA I: 1 MESA II: 1	I: -closed ecological system -Boeing high altitude chamber	I: -aborted after 4½ days
Group size or range	I: 5 II: 5		II: -sensory functioning -perceptual and motor skills -individual attitudes and experiences
Group composition	II: males		
Length of study or mission	I: 4 days (aborted) II: 30 days		
Off-duty time requirements	I: 2 hours/man/day II: one crew member suggested handicrafts -weekends desired		
Off-duty time activities	I: reading most used		

INDEX NO: 78

Acc. No.: AD 256 846

AUTHOR: Burns, N. M.; and Gifford, E. C.

Pub. Date: 13 March 1961

AGENCY/COMPANY Naval Air Material Center
Philadelphia, Pennsylvania

Rept. No: NAMC-ACEL-
414

TITLE: Environmental Requirements of Sealed Cabins for Space
and Orbital Flights--A Second Study

ABSTRACT: This paper reports the results of the performance tasks described in Part I of these same studies. Because of the small number of subjects used, the results were not very general and the authors insist that the findings are only suggestive. Performance on the tasks in which the operator function was routine and without apparent consequence deteriorated rapidly. Tasks where the operator could achieve some satisfaction and knowledge of results elicited a high quality of performance over a long period of time. In each of the time intervals studied, subjects in the confinement chamber overestimated the passage of time in comparison with controls. Degree of overestimation increased as length of confinement increased. Authors discuss in detail the effect of consensual validation on the tasks involving reasoning ability and some information about external events, loss of cues about diurnal variation and temperature changes, lack of knowledge of activities of others, inadequate information with regard to performance of various tasks or to perception of certain stimuli all increase the feeling of detachment and add to the insecurity. Any way in which confinement or isolation is interrupted could be interpreted to provide an opportunity for consensual validation. Many of the early studies on sensory deprivation did not take this into account.

Special
characteristics

Performance
measures

Number of groups	-simulator two compartments -monitored	-psychological tests -performance tasks
Group size or range 6		
Group composition Navy (Volunteers)		
Length of study or mission 8 days		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 79

Acc. No.:

AUTHOR: Burns, N. M.; and Ziegler, R. B.

Pub. Date: July 1960

AGENCY/COMPANY Naval Air Material Center
Philadelphia, Pennsylvania
Air Crew Equipment Laboratory

Rept. No: TED NAM AE-1403

TITLE: Environmental Requirements of Sealed Cabins for Space and Orbital Flights--
A Second Study. Part 3: Effects of Long Term Confinement on Personality
and Perception

ABSTRACT:

Six naval enlisted men served as subjects for 8 days of confinement in a simulated space vehicle. The effects on personal perception, personality changes, and group interaction are described. The data obtained is compared with the pre-confinement observations in order to provide a detailed analysis of the personality and perceptual changes that can be anticipated in future long range space and orbital flights. An extensive review of the anecdotal and experimental literature is also provided.

	Special characteristics	Performance measures
Number of groups	-isolation chamber	-Rohschach and other psychological tests -tape recordings -television monitoring -diaries -essays
Group size or range 6		
Group composition male (Volunteers)		
Length of study or mission 8 days		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 80

Acc. No.:

AUTHOR: Coburn, K. R.

Pub. Date: February 1967

AGENCY/COMPANY U. S. Naval Air Engineering Center
Philadelphia, Pennsylvania

Rept. No: NASA CR-708

TITLE: A Report of the Physiological, Psychological, and Bacteriological Aspects of 20 Days in Full Pressure Suits, 20 Days at 27,000 feet on 100% Oxygen, and 34 Days of Confinement. Part I.

ABSTRACT:

The study was designed to validate the 100% oxygen (258 mm Hg) gaseous environment for 20 days with 7 days pre and post run evaluations. Studies include: renal and pulmonary function, retinal vascular changes, rather extensive blood work, nutrition, metabolic and water balance, bacteriological flora alternations, psychological manifestations, and full pressure suit and personal hygiene evaluations.

While certain significant psychological alterations were observed, the physiological studies disclosed no significant variations from normal values. The atmosphere was well tolerated; however, 20 days constant full pressure suit wear posed some special problems.

		Special characteristics	Performance measures
Number of groups	2	-closed ecological system -subjects: Bioastronautical test facility -100% O ₂ environment	-Many different studies to test physiological and psychological aspects of 100% O ₂ , extended period in pressure suit, etc.
Group size or range	6 subjects 2 controls		
Group composition	Marine Corps and Navy officers, aviators		
Length of study or mission	34 days		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 81

Acc. No.: AD 420-948

AUTHOR: Cramer, E. H.; and Flinn, D. E.

Pub. Date: Sept. 1963

AGENCY/COMPANY

Rept. No: SAM-TDR-
63-27

TITLE: Psychiatric Aspects of the SAM Two-Man Space Cabin Simulator

ABSTRACT:

The authors discuss the interpersonal relationships and psychiatric problems arising in 2-man crews in the SAM chamber. Despite relative immobility and lack of opportunity for moving around there appeared to be little subjective reaction. The schedule kept the men separated physically much of the time. Perceptual aberrations although present in the one-man simulator, and sufficient to cause termination of flights, were not present to any significant degree in the two-man flight. Transient distortions occurred at least once in nearly half the subjects but were not associated with a true loss of contact with reality, nor with anxiety or disruption of performance. It would appear that despite underlying friction and hostility in individuals relatively unsuited to each other, mission goals are sufficiently important to prevent eruption of significant overt friction. Requirement to endure long periods of relatively monotonous monitoring while avoiding deleterious effects of boredom and fatigue appears to be significant and major problem, which may be aggravated in space flight by relative lack of mobility and limited opportunities for diversionary and recreational activity.

		Special characteristics	Performance measures
Number of groups	8	-space cabin simulator -closed ecological system	-observation -diaries -debriefing -tasks (both operational and psychomotor) -concealed microphones -psychiatric and psycho- logical evaluations
Group size or range	2 each		
Group composition	pilots		
Length of study or mission	2 for 30 days 4 for 17 days 2 for 17 days (controlled)		Assessment: -irritability -sleep loss -inadequate sleep schedule -performance maintained -mild illusions
Off-duty time requirements	monotony is a great problem		
Off-duty time activities	-day-dreaming -reading -drowsiness		

INDEX NO: 82

Acc. No.:

AUTHOR: Flinn, D. E.; Monroe, J. T.; Cramer, E. H.;
 and Hagen, D. H.

Pub. Date: 1961

AGENCY/COMPANY Neuropsychiatry Branch
 School of Aviation Medicine
 USAF Aerospace Medical Center
 Brooks Air Force Base, Texas

Rept. No:

TITLE: Observations in the SAM Two-Man Space Cabin Simulator
 IV. Behavioral Factors in Selection and Performance

Published: Aerospace Medicine, Vol. 32, pp. 610-615

ABSTRACT:

The purpose of the behavioral studies was (1) to observe patterns of behavior emerging and identify any disruptive emotional reaction, (2) to anticipate ways of minimizing stress leading to these responses, (3) to select suitable individuals. They note that factors imposing a degree of stress on the astronaut include severe confinement and limitation of ability, relatively monotonous and unvarying environment, prolonged commitment to exacting duties, and continual threat of external hazards. Results may be distraction from important tasks, impaired morale and motivation, increased possibility of errors or faulty judgment. They discuss confinement literature, particularly two-man confinement, pointing out that the latter frequently leads to disruption in interpersonal relations. Note also that a three-man group is basically unstable, since 2 members frequently ally against the third.

A few auditory illusions occurred but there was no evidence of gross perceptual aberration as seen in the one man space cabin simulator. Feelings of resentment appeared among the subjects but the success mission was sufficiently important to subjects that they consciously refrained from any disruptive behavior.

Special characteristics		Performance measures
Number of groups	4	-television observation by experimenters -interaction categories scoring daily (Bales) -diaries -pre-flight tests -debriefings Assessment: -occasional auditory hallucinations -performance was reasonable -little boredom indicated -maintained high morale and motivation
Group size or range	2 men	
Group composition		
Length of study or mission	14-30 days	
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 83

Acc. No.: AD435502

AUTHOR: Gorbov, F. D.; Myasnikov, V. I.; and
Yazdovskiy, B. I.

Pub. Date: March 1964

AGENCY/COMPANY

Foreign Technology Division,
Air Force Systems Command
Wright-Patterson Air Force Base, Ohio

Rept. No: FTD-TT-63-
1015

TITLE:

Stress and Fatigue Under Isolated Conditions

ABSTRACT:

		Special characteristics	Performance measures
Number of groups	Not Specified	-isolation; no light, sound; 1-way communi- cation	-tasks observations and reports by subjects and physiological measures -psychological tests
Group size or range	1		
Group composition	man		Assessment:
Length of study or mission	10-15 days		-changes in EEG -latency of EMG motor response increased -"level of the prescribed activity" decreased
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 84

Acc. No.: N63-10782

AUTHOR: Grodsky, M. A.; and Bryant, J. P.

Pub. Date: August 1962

AGENCY/COMPANY Martin Space Systems Division
Baltimore, Maryland

Rept. No: MAR-ER-
12693

TITLE: Crew Performance During Simulated Lunar Missions

ABSTRACT: This paper describes 2 pilot studies and one 7 day simulation of a Lunar orbital, landing, rendezvous and return flight. Authors note two major factors in prolonged space flight, namely, reduced spatial volume, and long duration of abnormal sensory environment. Note that studies on well simulated space mission tend to indicate less bizarre behavior and personality effects. Motivation of crews is an important variable and effects of duty cycle are probably as important as confinement or sensory deprivation. Results after flight 3 showed improvement over flight 1. General psychological conclusions were that length of flight (up to 7 days) does not appear to be factor in precipitating disturbance in personality or social spheres. During flight no occurrence of bizarre behavior, intense hostility, gross desocialization, or personality disturbances were observed. Crew seemed well motivated, responded well and appeared friendly. Some loss of performance was observed in system and navigational tasks but was attributed to lack of practice and not to spatial confinement.

Special characteristics		Performance measures
Number of groups	1	-tasks of lunar mission; compare performance with baseline performance -some decrement in performance attributed to lack of practice
Group size or range	4	
Group composition	NASA test pilots	
Length of study or mission	3 flights 2 for 3½ days 1 for 7 days	
Off-duty time requirements		
Off-duty time activities	-music system "to relieve any boredom" -exercise	

INDEX NO: 85

Acc. No.: AD 262 581

AUTHOR: Hagen, D. G.

Pub. Date: June 1961

AGENCY/COMPANY USAF Aerospace Medical Center (ATC)
Brooks Air Force Base, Texas

Rept. No: SAM 61-66

TITLE: Crew Interaction During a Thirty-Day Simulated Space Flight

ABSTRACT:

An analysis was made of crew interaction during a two-man simulated space chamber flight. By use of the well-known Bales Interaction Process Analysis, the behavior of the two subjects was rated during 2 hours of observation each day throughout the 30-day flight. Four kinds of summary interaction profiles were compiled. The overall summary profile resembled no other in the literature. The middle categories - asking for opinion, giving opinion, asking for information, and giving information - accounted for over 80 percent of the interaction. There was very little interaction in the more affectively tinged extreme categories. The adjustive mechanisms used by the subjects to handle the interpersonal tensions that arose from somewhat different personality factors were discussed.

		Special characteristics	Performance measures
Number of groups	1	-space capsule simulator -subjects <u>not</u> screened beforehand	-television and micro- phones -Bales categories
Group size or range	2		
Group composition	Air Force Pilots		
Length of study or mission	30 days		
Off-duty time requirements	-avoid interaction in free time if problems exist		
Off-duty time activities			

INDEX NO: 86

Acc. No.:

AUTHOR: Hanna, T. D.

Pub. Date: February 1967

AGENCY/COMPANY U. S. Naval Engineering Center
Philadelphia, Pennsylvania

Rept. No: NASA CR-708

TITLE: Some Psychological Measures on Six Men Confined 34 Days in a Sealed Cabin

Published: A Report of the Physiological, Psychological and Bacteriological Aspects
of 20 Days in Full Pressure Suits, 20 Days at 27,000 Feet on 100% Oxygen,
and 34 Days of Confinement, Part II, Section 8

ABSTRACT:

	Special characteristics	Performance measures
Number of groups 1	-100 cubic feet per man -sealed cabin -closed ecological system	-perceptual motor tasks to measure individual and group performance and level of aspiration -estimate own future performance
Group size or range 6		
Group composition U. S. Navy and U. S. Marine Corps aviators		
Length of study or mission 34 days		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 87

Acc. No.: AD 297 820

AUTHOR: Hanna, T. D.; Burns, N. M.; and Tiller, P. R.

Pub. Date: February 1963

AGENCY/COMPANY U.S. Naval Air Material Center
Philadelphia, Pennsylvania

Rept. No: NAEC-ACEL-490

TITLE: Behavioral and Physiological Responses to Varying Periods of Sensory Deprivation

ABSTRACT:

Six volunteer subjects were randomly subjected to 4, 8, 12, and 24 hours of reduced sensory stimulation as may occur in future space vehicles. Heart rate and plantar electrical skin conductance were monitored continuously during each session. Measures of time estimation, digit span, sentence completion, draw-a-person, and visually presented amorphous figures were obtained at the termination of each session along with control values. Under the limited conditions of the experiment and within the boundaries discussed in the report, it appears that (1) significant sources of variance may be attributed to personality differences among subjects, (2) length of deprivation is not an overall dominant source of variance, and (3) certain response systems are more sensitive to deprivation than others.

	Special characteristics	Performance measures
Number of groups	-isolation chamber -limited movement -dark, sound-proofed	-physiological measures
Group size or range 6 individuals		-time estimation
Group composition (Volunteers)		-digit span
Length of study 4, 8, 12 and 24 hours or mission		-sentence completion
Off-duty time requirements		-draw-a-person
Off-duty time activities		-visual amorphous figures
		Assessment:
		-performance decrement varied with length of confinement and personality differences

INDEX NO: 88

Acc. No.:

AUTHOR: Hartman, B.; McKenzie, R. E.; and Welch, B. E.

Pub. Date: Sept. 1962

AGENCY/COMPANY

Rept. No:

TITLE: Performance Effects in 17-Day Simulated Space Flights

Published: Aerospace Medicine, Vol. 33, Sept. 1962, pp. 1098-1102

ABSTRACT:

Eight subjects participated in pairs in four simulated space flights of 17 days duration in the SAM Two-Man Space Cabin Simulator. The flights were made at pressure equivalents of 33,500 feet altitude and 96 per cent + O₂ levels. In addition to the management of logistical and environmental aspects of the flights, subjects were required to perform a psychomotor task consisting of several systems-type sub-tasks. Duty tours were either two or five hours long. Work rates varied from very low (approximately 40 signals per hour) to high speed (more than 400 signals per hour). The day-vs-night dimension was also varied. Significant differences in performance were obtained for signal rates, with marked decrement occurring at the very low work rates. The results did not demonstrate systematic effects for length of duty period, day-vs-night, or duration of the flight. The task schedule attenuated the signal rate effect. These findings confirm tentative conclusions reported a year ago.

	Special characteristics	Performance measures
Number of groups 4	-SAM-2-man space cabin simulator -unusual work/rest cycle	-several systems type psychomotor tasks
Group size or range 2		-management of logistic and environmental aspects of flight
Group composition		-variations in duty tours, work rates, and day vs. night
Length of study or mission 17 days		-low signal rate created marked decrements in performance; however, unrelated to duty period, day vs. night, or flight duration
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 89

IAA
Acc. No.: A63-18957

AUTHOR: Hauty, G. T.

Pub. Date: 1963

AGENCY/COMPANY Civil Aeromedical Research Institute
Federal Aviation Agency
Oklahoma City, Okla.

Rept. No:

TITLE: Human Reliability and Confinement

ABSTRACT: Problems inherent in the modifiability of Circadian Periodicity and in impoverished sensory environments were explored for the purpose of appraising attenuative effects upon human reliability. The findings relative to the modifiability of biological rhythm indicate that adjustment to a drastic revision of the 24-hour biological day was accomplished by certain subjects. In impoverished sensory environments, the joint effects of impoverished sensory conditions and continuous work at an operator system drastically degraded the reliability of certain subjects. Management of certain aberrant behavior, specifically hallucinatory experiences, could be successfully achieved by those subjects who continuously attempted to maintain a diversity of sensory input.

		Special characteristics	Performance measures
Number of groups	I: unspecified II: unspecified (at least 3)	I: -man altitude chamber -closed ecological system -no verbal communication -no vision outside chamber -noise level controlled -light at constant high level -ad lib food consumption -3 8-hour days in one 24-hour period	I: -tasks--rated in terms of errors and of time -heart and respiratory readings -television monitoring -medical evaluation after confinement
Group size or range	I: 1 II: 1		
Group composition	I: highly selected all pilots (except 1)		
Length of study or mission	I: 7 days II: 30 hours		
Off-duty time requirements			
Off-duty time activities		II: -30 hours of continuous work on task	II: Assessment: -drastic deterioration after 20 hours, especially on vigilance tasks

INDEX NO: 90

Acc. No.: N-63-12885

AUTHOR: Mallick, B. L.; and Ream, H. E.

Pub. Date: January 1963

AGENCY/COMPANY NASA Langley Research Center
Langley Station, Hampton, Va.

Rept. No: IAS-63-18

TITLE: Crew Performance and Personal Observations on a
Lunar Mission Simulation

ABSTRACT:

In order to study the performance of a crew in prolonged space flight, a simulation of a lunar-landing mission was made. Three trained test pilots performed realistic duties during simulations of three missions. The areas evaluated include: duty cycles, physical conditioning of crew members prior to and during the mission, crew proficiency in normal mission duties, and crew alertness to emergency situations. The study showed no difficulties with test-pilot personnel for confinement periods up to 7 days. It was found that a 26-hour duty cycle with two 4-hour sleeping periods was suitable for a three-man crew on a 7-day mission, and that there was no decrement in performance resulting from the long mission time. Because of the onboard exercise program, there was no deterioration of physical condition, and the pilots' alertness remained high throughout the mission.

		Special characteristics	Performance measures
Number of groups	1	-lunar mission simulator -off-duty area -sleeping area -sanitation area	-objective tasks compared with pre-test dry runs (Launch, ascent, mid-course correction, orbit insertion, lunar landing, orbit rendezvous, re-entry)
Group size or range	3		
Group composition	trained test pilots		
Length of study or mission	3½ days and 7 days		
Off-duty time requirements	-music found valuable in combating boredom		
Off-duty time activities			Assessment: -no change in performance ability due to confinement

INDEX NO: 91

Acc. No.:

AUTHOR: Patton, Rollin M.

Pub. Date: December 1963

AGENCY/COMPANY Ames Research Center
Moffett Field, California

Rept. No: NASA TN D-1973

TITLE: Behavioral Testing During a 7-Day Confinement:
The Information Processing Task

ABSTRACT:

Two subjects were confined for 7 days in a mock-up of a small space capsule while a variety of physiological and behavioral tests were conducted. One of the latter, the information processing task, was sensitive to changes in task complexity and to time of day. The effects persisted for the duration of the confinement. Generally, the quality of performance held up well, suggesting that a crew compartment of comparable volume may be considered for use in a 7-day mission.

Special characteristics		Performance measures
Number of groups	-simulated space capsule -4-on and 4-off duty cycle	-information processing task -speed and error scores
Group size or range 2		
Group composition		
Length of study or mission 7 days		
Off-duty time requirements		
Off-duty time activities		Assessment: -no significant decrement in performance over time

INDEX NO: 92

Acc. No.:

AUTHOR: Patton, R. M.; and Randle, R. J.

Pub. Date: December 1963

AGENCY/COMPANY Ames Research Center
Moffett Field, California

Rept. No: NASA TN D-1974

TITLE: Behavioral Testing During a 7-Day Confinement:
The Pattern Discrimination Task

ABSTRACT:

Two subjects were confined for 7 days in a mock-up of a small space capsule while a variety of physiological and behavioral tests were conducted. One of the latter, the pattern discrimination task, exhibited changes in quality of performance related to the duration of confinement and time of day. Changes were also shown to occur over the course of a single shift. Nevertheless, performance remained at an acceptably high level throughout, suggesting that a crew compartment of comparable volume may be considered for use in 7-day mission.

	Special characteristics	Performance measures
Number of groups 1	-space capsule -4-on and 4-off schedule	-pattern discrimination task
Group size or range 2		
Group composition		Assessment:
Length of study or mission 7 days		-performance decrement was slight over days, within shifts, and at certain times of the day
Off-duty time requirements		-overall performance remained high
Off-duty time activities		

INDEX NO: 93

Acc. No.:

AUTHOR: Peters, J.; Benjamin, F. B.; Helvey, W. M.;
and Albright, G. A.

Pub. Date: September 1963

AGENCY/COMPANY

National Aeronautics and Space Administration
Washington, D. C.

Rept. No: NASA TN D-2113

Contract No: NASr-74

TITLE: Study of Sensory Deprivation, Pain and Personality
Relationships for Space Travel

ABSTRACT:

This study was devised to explore the hypothesis that sensitivity to pain is negatively correlated to sensory deprivation sensitivity, and positively correlated to certain personality variables. Various pain tests and psychological tests were given to members of two groups, then each subject was confined on a contour couch in a full scale model of a multi-man space capsule. Records of EEG, EKG, and respiration rate were made. Written records were kept of water and food intake, urine and fecal output. Subjects were instructed to remain in isolation as long as possible. Unknown to the subjects a maximum time of 40 hours was preselected. The numbers remaining for different periods are not stated but three groups were selected, a high group with a mean of 39.9 hours, an intermediate group with a mean of 36.1 hours, and a low group of 26.3 hours. Results showed that subjects could be categorized into groups, most average, and least able to endure pain. No consistency in results of psychological testing among the groups was observed. The hypothesis was not proven; in fact the opposite was shown, i. e., a direct rather than an inverse relationship between variables. In addition subjects most able to endure pain and reduced sensory input conditions suffered less anxiety without any headaches, or nausea, and remained in good functional condition for a longer period of time.

Special
characteristicsPerformance
measures

Number of groups	2	-capsule: -2-way communications -sensory input limited in hearing, seeing, touching, tasting, and movement	-ability to endure pain -performance on personality tests -relationship between sensitivity to pain and ability to withstand sensory input conditions
Group size	33 ministerial students		
or range	29 non-commissioned officers, AF Volunteers		
Group composition			
Length of study or mission			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 94

Acc. No.:

AUTHOR: Rathert, G. A. Jr.; McFadden, N. M.; Weick, R. F.; Patton, R. M.; Stinnett, G. W.; and Rogers, T. A. Pub. Date: Feb. 1964

AGENCY/COMPANY NASA, Washington D. C.

Rept. No: NASA TND-2065

TITLE: Minimum Crew Space Habitability for the Lunar Mission

ABSTRACT:

Tasks were completed during the 24 hour day on a shift basis. Tracking task showed no significant decrement or trend during the period. In a photographic and mathematical computation navigation task, the subjects' ability to make required measurements remained satisfactory, although errors occurred in arithmetic, probably because of design of task. A mission status monitoring task showed that subjects' alertness apparently did not deteriorate during the period. A vigilance task demonstrated that performance remained either constant or improved. A rate estimation task showed a general decrement in accuracy of velocity perception. A pattern discrimination task showed decrements which may well be attributable to disinterest rather than to a real decrease in discriminative ability. A letter cancellation task showed a consistent day to day rise in speed of task performance. Decrements in performance occurred related to task complexity. Physiological studies are also detailed. Physiological deterioration was similar to that to be expected from a week's confinement to bed, but less extensive.

		Special characteristics	Performance measures
Number of groups	1	-restricted work space	-8 tasks
Group size or range	2	-4-on and 4-off work schedule	-engineering
Group composition	1 pilot 1 physiologist	-not closed ecological system	-psychological
Length of study or mission	7 days	- "shirt sleeve environment"	-medical
Off-duty time requirements		-61.5 cubic feet per man	Assessment:
Off-duty time activities			-no performance decrements except velocity perception and pattern discrimination

INDEX NO: 95

Acc. No.: AD 641807

AUTHOR: Rodgin, D.W.; and Hartman, B O.

Pub. Date: March 1966

AGENCY/COMPANY USAF School of Aerospace Medicine
Aerospace Medical Division (AFSC)
Brooks Air Force Base, Texas

Rept. No: SAM TR 66-247

TITLE: The Study of Man During a 56-Day Exposure to an Oxygen-Helium
Atmosphere at 258 mm. Hg Total Pressure
XIII. Behavior Factors

ABSTRACT:

Four officer aircrewmen performed psychomotor tests 3 times daily and reported on sleep once a day during a 56-day exposure to an oxygen-helium atomsphere at 258 mm Hg total pressure. Psychomotor and sleep changes were minimal and essentially benign. Adaptation to altered schedules was generally good except for persistent complaints about sleep (not fully supported by sleep histories) from one subject. The tempo of activity and physical exercise regimen apparently prevented behavioral manifestations of deconditioning frequently seen in confinement studies.

		Special characteristics	Performance measures
Number of groups	1	-O ₂ -helium atmosphere	-psychomotor tasks 3 times a day
Group size or range	4		-sleep reports study effects of confinement on behavior
Group composition	officer aircrewmen		
Length of study or mission	56 days		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 96

Acc. No.: N64-11131

AUTHOR: Zhigarev, A.; and Iordanskiy, A.

Pub. Date: June 1963

AGENCY/COMPANY

Rept. No: JPRS: 19,953

TITLE: Human Reactions in Simulated Space Environment

Published: Kommunist (Communist), Yarevan

ABSTRACT:

		Special characteristics	Performance measures
Number of groups	unspecified	-isolation chamber	-increase in nervousness -decrement in performance and attitude after 10-15 days
Group size or range	unspecified		
Group composition			
Length of study or mission	unspecified		
Off-duty time requirements			
Off-duty time activities	-books -experiments		

[illegible]

INDEX NO: 97

Acc. No.: AD 240 654

AUTHOR: Adams, O. S.; and Chiles, W. D.

Pub. Date: March 1960

AGENCY/COMPANY Wright Air Development Division

Rept. No: WADD-TR-
60-248

Contr. No. AF 33(616)-6050

TITLE: Human Performance as a Function of the
Work-Rest Cycles

ABSTRACT:

This study was designed to investigate the effect on performance of four different work-rest period schedules (2 on and 2 off, 4 on and 4 off, 6 on and 6 off, and 8 on and 8 off) followed over a period of 96 hours. The subject sample consisted of 16 male college students with 4 subjects being assigned to each of the four work-rest period schedules. Performance was measured by means of a battery of psychomotor tasks involving arithmetic computation, pattern discrimination, monitoring, and vigilance. Additional data were obtained from information recorded in an experimenter's logbook and from responses to a subject questionnaire administered at the end of testing.

Although the performance tasks failed to differentiate among the four experimental groups, the observational evidence suggested that the subjects in the 2-hour and 4-hour groups achieved a more favorable adjustment than those in the other two groups.

		Special characteristics	Performance measures
Number of groups	4	-simulated area -able to go outside -1100 square feet	-arithmetic computation, pattern discrimination, monitoring, and vigilance -experimenter's log book -questionnaire
Group size or range	4		
Group composition	male college students (Volunteers)		
Length of study or mission	96 hours		
Off-duty time requirements	3-6 hours		
Off-duty time activities	-reading -playing cards -relaxing (18% of off duty time)		Assessment -all but three subjects indicated sufficient sleep -a difference in false responses to a per- ceptual motor task favoring 8-on/8-off was discounted

INDEX NO: 98

Acc. No.: AD 266-033
N62-10674

AUTHOR: Adams, O. S.; and Chiles, W. D.

Pub. Date: Nov. 1961

AGENCY/COMPANY Aerospace Medical Laboratory
Wright-Patterson Air Force Base, OhioRept. No: WADD-ASD-
TR-61-720TITLE: Human Performance as a Function of the Work-Rest
Ratio During Prolonged ConfinementContr. No. AF 33(616)-6050
and AF 33(616)-7607

ABSTRACT:

The purpose of this study was to investigate the feasibility of using a 4-hours-on-duty and 2-hours-off-duty schedule in the operation of advanced aerospace systems. Data obtained during two 15-day testing periods are summarized in the main body of this report. Additional performance data obtained from five studies using college student subjects are presented in appended sections of this report. These results are based on four 96-hour investigations (two with a 4- on and 2- off schedule and two with a 6- on and 2- off schedule) and one 120-hour control group study (4 hours per day, 5 days per week, for 6 weeks).

Although wide between group and between subjects variations occurred in both performance and physiological measures, it was concluded that with a minimum amount of selection, highly motivated crews can maintain acceptable performance levels on a four on and two off schedule for a period of two weeks and perhaps longer. Two subjects maintained a high performance level throughout duration of study. Seven of eleven subjects showed significant improvement with time in performance of learning task (pattern discrimination). The majority of subjects indicated they could have continued the test for a least another 15 days if necessary and important.

		Special characteristics	Performance measures
Number of groups	2	-simulated advanced crew system compartments -1100 cubic feet -no communication with outside world -did have intercom with experimenter used for "mission" only -white noise -4 hours on/2 hours off -2 crew eat at one time	-5 performance tasks: -warning lights -auditory vigilance -probability monitoring -arithmetic computation -pattern discrimination -4 psychophysiological measures: -skin resistance -skin temperature -heart rate -respiration rate
Group size or range	5 nonvolunteers 6 volunteers		
Group composition	B-52 Crews		
Length of study or mission	15-day periods for each group		
Off-duty time requirements			
Off-duty time activities			Assessment: -trend to decrement in performance in auditory vigilance, probability monitoring, arithmetic computation -performance improvement in pattern discrimination -significant diurnal variation in all performance tasks

INDEX NO: 99

Acc. No.:

AUTHOR: Alluisi, E. A.; and Chiles, W. D.

Pub. Date: 1967

AGENCY/COMPANY

Rept. No:

TITLE: Sustained Performance, Work-Rest Scheduling,
 and Diurnal Rhythms in Man

Published: Acta Psychologica, Vol. 27, 1967, pp. 436-442

ABSTRACT:

An attempt has been made here to summarize a 10-year program of research that has dealt with sustained performance, work-rest scheduling, and diurnal rhythms in man. The general conclusions reached are: (1) man can probably follow a 4-4 work-rest schedule for very long periods without detriment to his performance; (2) for shorter periods of 2 or possibly 4 weeks, selected men can follow a more demanding 4-2 work-rest schedule with reasonable maintenance of performance efficiency; (3) in following the more demanding schedule, man uses up his performance reserve and so is less able to meet the demands of emergency conditions such as those imposed by sleep loss; (4) the diurnal rhythm which is evidenced in physiological measures may also be evidenced in the performance depending on the information given to, and the motivation of, the subjects, and depending also on the total work load; even where motivation is sufficiently high, the cycling may be demonstrated when the operator is overloaded; and (5) the methodology employed yielded measures that are sensitive to the manipulation of both obvious and subtle experimental variables.

		Special characteristics	Performance measures
Number of groups	1		-MTP--6 tasks -vigilance
Group size or range	1		-watchkeeping -attentive functions -memory functions -sensory perceptual functions -procedural functions
Group composition			
Length of study or mission			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 100

Acc. No.: AD 283 842

AUTHOR: Alluisi, E. A.; Hall, T. J.; and Chiles, W. D.

Pub. Date: June 1962

AGENCY/COMPANY 6570th Aerospace Medical Research Labs.
Wright-Patterson Air Force Base, Ohio

Rept. No: MRL-TDR-62-70

TITLE: Group Performance During Four-Hour Periods of Confinement

ABSTRACT:

This study was carried out to determine the test-retest reliability of a battery of six performance tasks. Four of these tasks were designed to assess individual performance, and the remaining two tasks were designed to measure crew or group-dependent performance. In each of these group tasks, successful performance required interactions among crew members in the form of exchanges of information, cooperation, and temporal coordination.

Each of 5, 5-man crews was tested for 4 consecutive hours a day on each of 4 days after a 3-day training period. All testing was conducted with the crew members seated at work stations in an advanced-system crew compartment mock-up. All of the measures taken with the six tests exhibit satisfactorily high reliability coefficients.

		Special characteristics	Performance measures
Number of groups	5	-5-man simulated advanced crew mock- up during testing hours only	-6 performance tasks: arithmetic computa- tions auditory vigilance warning lights probability monitoring target identification code-lock solving
Group size or range	5 each		
Group composition	Air Force ROTC (Volunteers)		
Length of study	28 hrs. not continuous		
or mission	4 hrs. on ea. of 7 days		
<u>Actual test: 4 hrs. on ea. of 4 days</u>			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 101

Acc. No.: AD 606 214

AUTHOR: Alluisi, E. A.; Chiles, W. D.; and Hall, T. J.

Pub. Date: June 1964

AGENCY/COMPANY Aerospace Medical Research Laboratories
Aerospace Medical Division
Wright-Patterson Air Force Base, Ohio

Rept. No: WADD-AMRL-
TDR-64-63

Contr. No. AF 33(657)-
10506

TITLE:

Combined Effects of Sleep Loss and Demanding
Work-Rest Schedules on Crew Performance

ABSTRACT:

Four 12-day confinement studies are reported. In each of two of these studies, subjects were organized into two 5-man crews who worked alternating shifts on a schedule of 4 hours on duty and 4-hours off for the entire 12-day confinement period. In each of the other two studies, six USAF Pilots were confined for 12 days while following a schedule of 4-hours on duty and 2-hours off. The groups in each study were confined to a simulated advanced-system crew compartment; while on duty the operators were tested with a battery of six performance tasks, two of which required interactions among crewmembers in the form of exchanges of information, cooperation, and temporal coordination. During the middle two days of the 12-day confinement period, i.e., on days, six and seven, the crews following the 4-4 work-rest schedule were assigned extra work that resulted in each man's remaining awake for a 44-hour period; on the same days, the crews following the 4-2 schedule were assigned extra work that resulted in each man's remaining awake for a 40-hour period.

The data show that performance is generally inferior on the 4-2 schedule as compared to the 4-4 schedule and that the stress of a period of sleep loss results in generally greater performance decrements on the 4-2 than on the 4-4 schedule. The 4-2 schedule is not recommended if emergency periods involving sleep loss can be expected and a high level of performance is a critical requirement.

		Special characteristics	Performance measures
Number of groups	4	-simulated advanced-system crew compartment	-6 tasks plus extra tasks
Group size or range	10 each	-2 groups: 4-4 -2 groups: 4-2	-2 psychophysical measures -self-estimate of efficiency
Group composition	Air Force Pilots (Volunteers)		
Length of study or mission	12 days		Assessment: -4-4 schedule, no significant change -4-2 schedule, deterioration in performance
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 102

Acc. No.: AD 426 661

AUTHOR: Alluisi, E. A.; Chiles, W. D.; Hall, T. J.;
and Hawkes, G. R.

Pub. Date: Nov. 1963

AGENCY/COMPANY Aerospace Medical Research Laboratories
Wright-Patterson Air Force Base, OhioRept. No: AMRL-TDR-
63-87Contr. No. AF 33 (616)-
7607-M4

TITLE: Human Group Performance During Confinement

ABSTRACT:

Morale started high but tended to drop during the first few days and then remained relatively constant except for noticeable rises at several specific points, e. g., at mid-points of confinement periods, or minor celebrations. Subjective irritability, sleepiness, and fatigue were observed. None of these adversely affected task performance. No hallucinations or illusions were observed. Results of performance measures were not clear cut. Variations appeared to be related to motivation, diurnal cycling, and duration of the task. The greatest differences were probably a direct reflection of the relative impacts of the two work-rest schedules. At least some highly motivated subjects can follow a 4-2 schedule without showing decrements. The extra hour of performance per day, however, is achieved at a price, namely, the inability of the subjects to sustain performance at the level generally maintained by a comparable group working only 12 hours per day on a 4-4 schedule.

	Special characteristics	Performance measures
Number of I. 1 groups II. 2	I. -4-hours on and 2- hours off -simulated advanced system crew compart- ment -Hope II 1100 cubic feet	I. -6 performance tasks -2 interaction tasks -pulse rate -axillary temperature Assessment: -minor decrement
Group size I. 6 or range II. 5		
Group composition I. AF Cadets (Volunteers) II. AF Pilots		
Length of study I. 15 days or mission II. 30 days	II. -4-hours on and 4- hours off -Hope III	II. -no change in perfor- mance
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 103

Acc. No.:

AUTHOR: Chiles, W. D.; and Adams, O. S.

Pub. Date: July 1961

AGENCY/COMPANY Aeronautical Systems Division
Wright-Patterson Air Force Base, OhioRept. No: ASD-TR-
61-270

TITLE: Human Performance and the Work-Rest Schedule

ABSTRACT:

This report contains a condensation of the material most relevant to the problem of work:rest scheduling in advanced aerospace systems. The major conclusions drawn are: (a) periods of wakefulness longer than 24 hours requiring performance of critical tasks are not feasible as a routine procedure; (b) 6 hours of sleep per day are adequate for most individuals; (c) sleep periods should not be less than 2 hours in duration; (d) continuous performance of monotonous tasks by themselves should not exceed 2 hours; (e) performance of active tasks may be extended to 10 hours; (f) total cycle duration (work plus rest) should be 4, 6, 8 or 12 hours in order to permit regular day to day schedules; (g) where stress will be high, schedules no more severe than 2-work:2-rest (or equivalent) should be used; (h) 7 or 8 days pretesting should be adequate to select persons adaptable to schedule changes; (i) a 5-day preadaptation period should be used to overcome initial sleep losses

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 104

Acc. No.:

AUTHOR: Eberhard, J. W.

Pub. Date: August 1966

AGENCY/COMPANY The Matrix Corporation
Tavern Square, Alexandria, Virginia

Rept. No:

TITLE: Sleep Requirements and Work-Rest Cycles for Long Term Space Missions

Paper presented at The Human Factors Society National Convention
November 1-4, 1966, Anaheim, California

ABSTRACT:

An analysis of the literature was performed in order to establish what the sleep-wakefulness/work-rest requirements for near future space flights should be. The space flights considered were Apollo, Manned Orbiting Laboratory, and the Apollo Applications Program. The analysis indicated that 1. less than the normal eight hours sleep, probably six hours, would be sufficient as a function of the weightless environment. 2. There is inadequate data relating to the long term efficiency of split sleep and generally split sleep is not recommended for these missions. 3. The amount of sleep and the influence of weightlessness on sleep should be part of the research requirements for some of the early orbital studies. 4. If other than the astronauts earth-oriented day is scheduled, then, consideration to conditioning the astronauts to the space mission sleep schedule is required.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 105

Acc. No.:

AUTHOR: Hartman, B. O.; and Langdon, D. E.

Pub. Date: August 1965

AGENCY/COMPANY USAF School of Aerospace Medicine
Aerospace Medical Division (AFSC)
Brooks Air Force Base, Texas

Rept. No: SAM-TR-65-61

TITLE: A Second Study on Performance Upon Sudden Awakening.

ABSTRACT:

Five subjects served for five successive nights in an experiment on performance upon sudden awakening. Two performed on a systems (procedural) task and three on a flying task. Awakening performance was always poorer than presleep performance. Performance on the systems task showed a systemic recovery during the 10-minute trial after awakening, but not on the flying task. The findings agree well with an earlier study.

Special characteristics		Performance measures
Number of groups	1	-procedural task -piloting task
Group size or range	5	
Group composition	Air Force (Volunteers)	
Length of study or mission	3 weeks	
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 106

Acc. No.:

AUTHOR: Hartman, B. O.; Langdon, D. E.; and
McKenzie, R. E.

Pub. Date: August 1965

AGENCY/COMPANY

USAF School of Aerospace Medicine
Aerospace Medical Division (AFSC)
Brooks Air Force Base, Texas

Rept. No: SAM-TR-65-63

TITLE: A Third Study on Performance Upon Sudden Awakening

ABSTRACT:

Four subjects served for five successive nights in an experiment on performance upon sudden awakening. Subjects performed a piloting task for 10 minutes before going to bed, once at night after sudden awakening, and again in the morning after sudden awakening. Proficiency upon sudden awakening was always poorer than presleep performance. No systematic recovery in proficiency after sudden awakening could be seen. No relationship between proficiency and oral temperature could be seen. Poorer performance was associated with deeper sleep states prior to awakening.

Special characteristics		Performance measures
Number of groups	1	-piloting task Assessment: -decrement in performance upon sudden awakening
Group size or range	4	
Group composition	Air Force (Volunteers)	
Length of study or mission	3 weeks	
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 107

Acc. No.:

AUTHOR: Jerison, H. J.; and Pickett, R. M.

Pub. Date: 1963

AGENCY/COMPANY

Rept. No:

TITLE: Vigilance: A Review and Re-Evaluation

Published: The Journal of the Human Factors Society, Vol. 5, pp. 211-238

ABSTRACT:

Vigilance as a human factors area is concerned with the fact that man is much less capable as a detector of signals under operational conditions than would be indicated by laboratory measures of his sensory thresholds. The area, which is obviously important for the analysis of man's visual capabilities in the operation of manned space systems, is re-examined with the help of a theoretical model that introduces a decision-theory approach to the observing response phase of the vigilance task. After a critical review of the vigilance literature, examples are presented of the application of this approach to the solution of human factors problems of the sort that might arise in manned space missions. The model is also used to suggest the kind of research that would make it easier to predict field monitoring performance from laboratory experiments.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 108

Acc. No.:

AUTHOR: Kleitman, J.

Pub. Date: 1963

AGENCY/COMPANY The University of Chicago Press
Chicago, Illinois

Rept. No:

TITLE: Sleep and Wakefulness

ABSTRACT: The author has reviewed international research on the experimental, pathological, and theoretical aspects of sleep-wakefulness phenomena with exceptional thoroughness. The early chapters are devoted to the functional differences between wakefulness and sleep--sometimes known as the "concomitants of sleep". The next part deals with the course of events in a single sleep period, more properly the sleep phase of the cycle. The author then treats activities extending over both phases of the cycle and exhibiting periodic or rhythmic characteristics. The following parts discuss artificial (experimental) interference with, and spontaneous (pathological) changes in the sleep-wakefulness rhythm; means of influencing sleep through pharmacological, therapeutic, and hygienic measures; and states resembling sleep: hypnosis and hibernation. The book closes with an analysis of existing theories and a further development of the author's previously advanced evolutionary theory of sleep and wakefulness. The Bibliography comprises over 4,300 references; an Author Index is also included.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 109

Acc. No.:

AUTHOR: Ray, J. T.; Martin, O. E., Jr.; and Alluisi, E. A.

Pub. Date: 1961

AGENCY/COMPANY National Academy of Sciences
National Research Council
Washington, D. C.

Rept. No: Publ. #882

TITLE: Human Performance as a Function of the Work-Rest Cycle
A Review of Selected Studies

ABSTRACT:

Studies relating to the effects of different work-rest cycles on man's performance are reviewed in this report. Included are only those studies in which (a) observations of performance extend for 24 hours or longer, and (b) results pertain to the general problem of optimizing performance through the scheduling of work and rest periods.

While several specific conclusions are supported by the studies reviewed, the number of generalizations relating to optimal work-rest scheduling are limited. It is not yet possible to describe accurately the complex relations among performance variables, work-rest cycles, sleep-wakefulness cycles, and the durations of the work, rest, and sleep periods. The need for additional long-term experimentation is evident.

	Special characteristics	Performance measures
Number of groups	- good source of older industrial studies on length of work week	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 110

Acc. No.:

AUTHOR: Trumbull, R.

Pub. Date: October 1966

AGENCY/COMPANY

Rept. No:

TITLE:

Diurnal Cycles and Work-Rest Scheduling in Unusual Environments

Published: Human Factors, October 1966, pp. 385-398

ABSTRACT:

The extension of man's working environment and its control have lead to a new consideration of his "normal" neuro-physiological and psychological rhythms. There are some fifty such patterns of fluctuating functions within man which have various degrees of influence upon his level of performance and ability to maintain performance. Data are provided from physiological and psychological research in an attempt to provide perspective for selection of appropriate personnel and establishment of work/rest or duty cycles in deference to these influences.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 111

Acc. No.: AD 620 232

AUTHOR: Trumbull, R.

Pub. Date: 29 July 1965

AGENCY/COMPANY

Rept. No: ACR-105

Office of Naval Research
Washington, D. C.

TITLE: Environment Modification for Human Performance

ABSTRACT: Human performance is determined by interaction between a variety of environments. These include the physical, the social and cultural, and the personal environments in which man lives, through which he expresses himself, and on the basis of which he performs. Influence is exerted by the various factors or elements as they exist as well as how they are perceived by him. Characteristically, these environments have been studied by different disciplines, which have reported findings and recommendations through their own journals.

This is an attempt to bring relevant data together in a meaningful pattern. It allows fuller appreciation of the contributions of each environment and the requirements for consideration of the total picture. It is a review of the established limits of these many factors as a guide toward presenting optimum conditions for man's performance. The full story has yet to be told through interdisciplinary and more comprehensive research with performance as the one criterion.

Each topic is presented with some results of the more promising techniques for overcoming the influence of the factor involved upon performance.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

[illegible]

[illegible]

INDEX NO: 112

Acc. No.:

AUTHOR: The Commission on Goals for American
Recreation

Pub. Date: 1964

AGENCY/COMPANY

Rept. No:

American Association for Health, Physical Education
and Recreation
1201 16th Street, N.W. Washington, D. C. 20036

TITLE:

Goals for American Recreation

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 113

Acc. No.:

AUTHOR:

Pub. Date: November 1965

AGENCY/COMPANY American Association for Health, Physical
Education, and Recreation

Rept. No:

TITLE: Recreation Research

From the collected papers of the National Conference on Recreation Research,
Pennsylvania State University

ABSTRACT:

The book presents a synthesis of research efforts in the area of recreation. Individual papers are presented related to the effects of recreation establishing user preference and special aspects of recreation research--administration, cooperation, funding and the research process. Some interesting innovations relating recreation to mental health and society are presented.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 114

Acc. No.:

AUTHOR: Brightbill, C. K.

Pub. Date: 1960

AGENCY/COMPANY Prentice-Hall, Inc.
Englewood Cliffs, New Jersey

Rept. No:

TITLE: The Challenge of Leisure

ABSTRACT:

Brightbill distinguished leisure time from time required for existence (eating, sleeping, eliminating, medicating, etc.) and subsistence (the thing we must do to make a living).

"Leisure, then, is a block of unoccupied time, spare time or free time when we are free to rest or do what we choose."

"It is discretionary time, the time to be used according to our own judgment or choice."

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 115

Acc. No.:

AUTHOR: Formulated by the Committee on Public Education

Pub. Date: August 1958

AGENCY/COMPANY

Rept. No: 39

Group for the Advancement of Psychiatry
New York, New York

TITLE: The Psychiatrist's Interest in Leisure-Time Activities

ABSTRACT:

Examines the psychiatrist's opportunities to contribute to a more pleasurable and productive life as well as to the mental health problems related to leisure-time activities. Among topics included in this report are: use of leisure-time; leisure-time agencies; examples of ways that psychiatrists have been used in leisure-time agencies; role of the psychiatrists in such agencies.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 116

Acc. No.:

AUTHOR: de Grazia, Sebastian

Pub. Date: 1962

AGENCY/COMPANY

The Twentieth Century Fund
New York

Rept. No:

TITLE: Of Time, Work and Leisure

ABSTRACT:

The author presents a good overview of the time and activity problem. He questions whether there is more free time today than there was thirty years ago and indicates that most individuals do not seek much additional leisure time. The book has an excellent appendix with survey data and critical features of the surveys which were conducted.

	Special characteristics	Performance measures
Number of groups	-free time and its uses	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 117

Acc. No.:

AUTHOR: Eddowes, E. E.

Pub. Date: June 1961

AGENCY/COMPANY

Rept. No:

TITLE: Survey of Leisure Time Activity--Implications for the Design of a Space Vehicle

Published: Aerospace Medicine, Vol. 32, June 1961, pp. 541-544

ABSTRACT:

The general purpose of the study was to furnish data to be used in a study project dealing with human factors in space flight. The specific problem was to determine if it were possible to provide facilities which would enable a space crewman to spend his off duty hours on a space mission in a way similar to his everyday life on earth.

Certain rather tenuous assumptions were made about space crews and their eventual similarity to our sample, and about development in equipment integration in space crew quarters. All of these assumptions tend to qualify the conclusion that the proper human engineering of a space cabin can reduce the effects of isolation and a restricted environment on human performance.

		Special characteristics	Performance measures
Number of groups	1	-questionnaires, essay type -one biographical essay	-frequency of answers
Group size or range	80		
Group composition	Males, mostly engineers (Volunteers)		
Length of study or mission			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 118

Acc. No.:

AUTHOR:

Pub. Date: June 1967

AGENCY/COMPANY Haire Publishing Company
Philadelphia, Pennsylvania

Rept. No:

TITLE: Toys and Novelties Directory Issue

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 119

Acc. No.: N66-15004

AUTHOR: Kuznetsov, O. N.; and Lebedev, V. I.

Pub. Date: 1965

AGENCY/COMPANY

Rept. No: TT: 65-32855

TITLE: On the Problem of Non-Regulated Activity in Conditions of
Prolonged Isolation with Sensory Deprivation

Published: Voprosy Psikhologii (Problems of Psychology), No. 4, Moscow, pp. 98-102

ABSTRACT: Tests were conducted to determine the nervous and psychological stability of individuals during a prolonged stay (10-15 days) in a soundproof isolation chamber. Tests of working capacity, sleep, and the dynamics of physiological and psychic functions were conducted during different work-rest regimes (normal, reverse, and split regimes). Constant television and microphone monitoring was employed. Four hours of each day were devoted to a specified program, and the rest were left to the subject's choice of activity. This use of free time is the subject of the article. No books or games were provided, only colored pencils and paper, wood blocks, and a knife.

Before the experiment, the subjects doubted their ability to use free time productively, especially since previous isolation experiments had permitted reading. At first the subjects were generally inactive. By the 2nd or 3rd day they were spending their free time in a variety of ways: they sang, whistled, wrote stories and poems, drew, and built structures and toys of wood and available materials.

It was concluded that the subjects adapted quite well to solitude.

Special characteristics		Performance measures
Number of groups		-performance capacity -dynamics of physiological and mental functions
Group size or range		-sleep -television monitoring -physiological monitoring -tasks for 4 hours a day
Group composition		
Length of study or mission	10-15 days	
Off-duty time requirements		
Off-duty time activities	-crayons -paper -wood -knife	

INDEX NO: 120

Acc. No.:

AUTHOR: Madow, P. (Ed.)

Pub. Date: 1965

AGENCY/COMPANY The H. W. Wilson Company
New York, New York Vol. 37, No. 2

Rept. No:

TITLE: Recreation in America

ABSTRACT: The articles reprinted in this volume contain information and varied comments on the social and economic effects of increased leisure in America and on the role of public agencies in providing recreational facilities. In addition, some popular American pastimes are discussed. The last section examines the developing profession of recreational management and reviews various private agencies offering leisure-time opportunities.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

serendipity associates
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INDEX NO: 121

Acc. No.:

AUTHOR: Martin, A. R.

Pub. Date: January 1964

AGENCY/COMPANY

Rept. No:

TITLE: Man's Leisure and His Health

Published: Lectures to the Laity, Twenty-Sixth Series, Vol. 40, No. 1, New York
Academy of Medicine

ABSTRACT: This review represents a psychiatrists view of the state of leisure in the scientific world and our society. He indicates that leisure has been the subject of centuries of philosophical speculation and affirmation but has never been subjected to scientific investigation. (p. 25) Furthermore, our present state of confusion regarding leisure is so great that far from knowing any of the answers, we do not even know the questions to ask. Stress is placed upon the Aristotelian concept of fruitful use of free time.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 122

Acc. No.:

AUTHOR:

Pub. Date: 1950

AGENCY/COMPANY National Recreation Association
Association Press, New York

Rept. No:

TITLE: Recreation Activities for Adults

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	-good data source on "how to do" for adult games	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 123

Acc. No.:

AUTHOR:

Pub. Date: 1966-67

AGENCY/COMPANY National Recreation and Park Association
1700 Pennsylvania Avenue
Washington, D.C. 20006

Rept. No:

TITLE: A Guide to Books on Recreation
Eleventh Annual Edition

ABSTRACT:

National Recreation and Park Association presents an annotated list of 670 books on all phases of recreation. AGBOR books can be purchased from NRPA. It lists 91 publishers in the area.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 124

Acc. No.:

AUTHOR:

Pub. Date: 1962

AGENCY/COMPANY Opinion Research Corporation

Rept. No:

TITLE: The Public Appraises Movies, a survey for Motion Picture Association of America, Inc.

Published: Of Time, Work & Leisure, de Grazia, Sebastian, The Twentieth Century Fund, New York

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-findings presented in final report	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 125

Acc. No.:

AUTHOR: Robinson, J. P.

Pub. Date: August 1967

AGENCY/COMPANY Survey Research Center
The University of Michigan

Rept. No:

TITLE: Social Change as Measured By Time-Budgets

ABSTRACT:

Robinson presents the best summary of time utilization available for the general population. It compares all of the major time utilization studies completed over the past thirty years.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 126

Acc. No.:

AUTHOR: Robinson, J. P.; and Converse, P. E.

Pub. Date: August 1966

AGENCY/COMPANY Survey Research Center
The University of Michigan

Rept. No:

TITLE: The Impact of Television on Mass Media Usage: A Cross-National Comparison

Paper read at the Sixth World Congress of Sociology in Evian, France, September 1966.

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 127

Acc. No.:

AUTHOR: Shurley, J. T.; Pierce, C. M.; Natani, K.; and
Brooks, R. E.

Pub. Date:

AGENCY/COMPANY University of Oklahoma School of Medicine
and Veterans Administration Hospital
Oklahoma City, Oklahoma

Rept. No:

TITLE: Sleep and Activity Patterns at South Pole Station
A Preliminary Report

ABSTRACT:

A preliminary report of observed sleep and activity patterns for men in three Antarctic stations is presented. The results are for the summer period-- a time period that has reasonable work opportunities and is less confining than the winter period. The volunteers filled out activity cards accounting for each one half hour period which were collected and reviewed on a daily basis. Response to more than one activity pattern for the half hour periods were permitted. The results indicated that the men averaged 7.65 hours for sleep, 9.69 for work, and 8.06 for off duty time. There were some station differences. The men talked, ate and attended more movies than men in general.

		Special characteristics	Performance measures
Number of groups	3		
Group size or range	8-20		
Group composition	Navy, Controls		
Length of study or mission	6 months +		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 128

Acc. No.: A 66-80286

AUTHOR: Treisman, M.

Pub. Date: October 1965

AGENCY/COMPANY

Rept. No:

TITLE: Psychology of Time

Published: Discovery, pp. 40-45

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 129

Acc. No.:

AUTHOR:

Pub. Date: 1960

AGENCY/COMPANY U. S. Department of Health, Education and
Welfare
Welfare Administration Children's Bureau

Rept. No:

TITLE: Handbook for Recreation

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 130

Acc. No.:

AUTHOR:

Pub. Date: 1962

AGENCY/COMPANY J. A. Ward, Inc.

Rept. No:

TITLE: A Nationwide Study of Living Habits; a national survey conducted for
the Mutual Broadcasting System, 1954.

Published: Of Time, Work & Leisure, de Grazia, Sebastian, The Twentieth
Century Fund, New York

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 131

Acc. No.:

AUTHOR: Warshofsky, F.

Pub. Date: Released March
19, 1967

AGENCY/COMPANY CBS News
524 West 57th Street
New York, New York 10019

Rept. No:

TITLE: "Mars and Beyond" an episode in The 21st Century

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-Dr. Krafft Ehricke, a guest on the program, speaks of the future recreational uses of space	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities	-three dimensional tennis	

Index Number	Author	Year	No. of Groups	Group Size	Composition						Length of Study	Off-Duty Time (minutes)	No. of ODT Activities	Abstract
					Civilian	Military	Officer	Enlisted	Pilots	Volunteers				
132	Adams, O. S.	59	3	5	X					X	7 days		3	Yes
133	Altman, I.	67	1	9 dyads							10 days		4	Yes
134	Altman, I.	65	2	9 dyads		X					22-44 hours		6	Yes
135	Altman, J. W. Phase I:	60	4	7-27					X		1-2 weeks		6	Yes
	Phase II:	60	4	30							10 days		4	Yes
136	Cole, J. D.	67	2	9 dyads							5 months			Yes
137	Findley, J. D.	63	1	1	X					X	2-14 days		10	Yes
138	Hammes, J. A.	66	10	30-500	X						4 days		3	Yes
139	Hammes, J. A. Phase I:	65		30	X						2 weeks		3	Yes
	Phase II:	65		30	X						2 weeks		3	Yes
	Phase III:	65		30	X						1 week		4	Yes
	Phase IV:	65		30	X						10 days		3	No
140	Haythorn, W. W.	67									10 days		3	No
141	Haythorn, W. W.	67	18	2		X				X	10 days	several hrs/day		Yes
142	Haythorn, W. W.	67	18	2		X					10 days		4	Yes
143	Haythorn, W. W.	66	2	9 dyads		X								Yes
144	Myers, T. I.	64												Yes
145	Myers, T. I.	63	2	45-64		X				X				Yes

Index Number	Author	Year	No. of Groups	Group Size Low-High	Composition						Length of Study Low-High	Off-Duty Time (minutes)	No. of ODT Activities	Abstract
					Civilian	Military	Officer	Enlisted	Pilots	Volunteers				
146	Myers, T. I.	63		30-40		X				X	96 hours		No	No
147	Myers, T. I.	66	2	176 subjects 176 controls							4 days		Yes	Yes
148	Myers, T. I.	62		200+		X				X	96 hours		Yes	Yes
149	Murphy, D. B.	63	2	62							96 hours		Yes	Yes
150	Smith, E. E.	59	20	6		X							Yes	Yes
151	Smith, S.	66	2	20-40		X					7 days		Yes	Yes
152	Smith, S.	67	2	20-40		X		X			7 days		Yes	Yes
153	Smith, S.	63	2	40-58		X				X	4 days		Yes	Yes
154	Smith, S.	67	48	individuals		X		X			4 days		Yes	Yes
155	Smith, S.	67	2	59-76		X		X			4 days		Yes	Yes
156	Strope, W. E.	60	1	100	X					X	2 weeks		Yes	Yes
157	Strope, W. E.	61	1	100	X					X	5 days		Yes	Yes

INDEX NO: 132

Acc. No.: AD 213-592

AUTHOR: Adams, O. S.; Levine, R. B.; and Chiles, W. D.

Pub. Date: March 1959

AGENCY/COMPANY Air Research and Development Command
Wright-Patterson Air Force Base, OhioRept. No: WADC-TR-
59-120

Contr. No. AF 33(616)-6050

TITLE: Research to Investigate Factors Affecting
Multiple-Task Psychomotor Performance

ABSTRACT:

Fifteen male subjects participated in an experiment designed to study: (a) the 24-hour test-retest reliability and intercorrelation of a battery of seven performance tasks; (b) the effects of performing simultaneously various combinations of physically compatible tasks; (c) the 24-hour test-retest reliability and intercorrelation of a battery of four psychophysiological variables; and (d) the relation of psychophysiological criterion measures to performance criteria and to conditions of task presentation.

The results indicated moderately high reliability and sensitivity for five of the performance task criteria, but a negligible amount of intercorrelation. While no significant correlation was obtained between performance scores and measures of psychophysiological activity, several of the psychophysiological measures showed significant reliability, intercorrelation, and sensitivity to conditions of rest and performance activity.

		Special characteristics	Performance measures
Number of groups	3	-advanced flight station mock-up (5-man) -noise level controlled -social isolation -development of psychomotor performance tasks that were subsequently used in the Lockheed-Georgia Studies	-7 performance tasks -4 psychophysiological measures
Group size or range	5 each		
Group composition	college males (volunteers)		
Length of study or mission	7 days		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 133

Acc. No.:

AUTHOR: Altman, I.; and Haythorn, W. W.

Pub. Date: 1967

AGENCY/COMPANY

Rept. No:

TITLE: The Ecology of Isolated Groups

Published: Behavioral Science, Vol. 12, No. 3, pp. 169-182

This study examines social activity and "territorial" behavior for beds, areas of a room, and chairs in socially isolated and nonisolated dyads. Dyads were formed according to a Greco-Latin square design with composition differences on dogmatism, need achievement, need affiliation, and need dominance. Nine dyads lived in a small room for ten days with no outside contact. Matched controls followed the same schedule, but had access to other people and outside facilities.

Men in socially isolated groups showed a gradual increase in territorial behavior and a general pattern of social withdrawal, the latter reflected in increased time spent alone vs. time spent in joint activities. There also seemed to be a developmental sequence of territorial behavior, with fixed geographical areas and highly personal objects subject to jurisdictional control first, and more mobile, less personal objects somewhat later. There were also interaction effects of social isolation and group composition on social activities and territorial behavior. Incompatibility on traits directly associated with interpersonal matters (dominance and affiliation) resulted in high territoriality while incompatibility on characteristics relevant to ideas and objects (achievement and dogmatism) did not have strong territorial outcomes. For social activities, personality incompatibility on "egocentric" characteristics (dominance and dogmatism) were associated with high social activity while incompatibility on "sociocentric" characteristics (affiliation and achievement) led to social withdrawal.

		Special characteristics	Performance measures
Number of groups	1	-pairs were strangers -12' x 12' room -no way to tell time	-social activity -"territorial" behavior for beds, chairs, and areas of rooms -had 3 tasks to perform
Group size or range	9 dyads of subjects 9 dyads of controls		
Group composition			
Length of study or mission			
Off-duty time requirements			
Off-duty time activities	-cards -checkers -reading		

INDEX NO: 134

Acc. No.:

AUTHOR: Altman, I.; and Haythorn, W. W.

Pub. Date: Dec. 1965

AGENCY/COMPANY

Rept. No:

TITLE: Interpersonal Exchange in Isolation

Published, Sociometry, Vol. 28, No. 4, pp. 411-426

ABSTRACT:

This study explored interpersonal exchange in isolated and non-isolated groups. Nine dyads formed at different levels on need achievement, need dominance, need affiliation and dogmatism worked and lived in a small room for ten days, with no outside contact. Matched controls followed a similar schedule but had access to other people and outside facilities. Results on a self-disclosure questionnaire showed several differences. Isolates revealed more about intimate topics to partner than controls, although less than to best friend. Controls revealed in intimate areas comparable to disclosure to average persons. Isolates also achieved a depth of disclosure similar to that achieved with close friends, although the magnitude of such disclosure was small. Results were integrated into a general theoretical model describing the development of relationships and exchange of personal information.

		Special characteristics	Performance measures
Number of groups	2	<ul style="list-style-type: none"> -subjects isolated in a 12' x 12' chamber -controls allowed to leave rooms except for tasks -subjects--continuous observation and audio monitoring -subjects had no communication with the outside -subjects and controls paired on personality variables 	<ul style="list-style-type: none"> -self-disclosure questionnaire -2 group tasks -one 1-man vigilance -observer ratings
Group size or range	9 dyads subjects 9 dyads controls		
Group composition	Navy sailors		
Length of study or mission	10 days		
Off-duty time requirements			
Off-duty time activities	<ul style="list-style-type: none"> -cards -checkers -cribbage -reading 		

INDEX NO: 135

Acc. No.: AD 270163

AUTHOR: Altman, J. W.; Smith, R. W.; Meyers, R. L.;
McKenna, F. S.; and Bryson, S.

Pub. Date: 1960

AGENCY/COMPANY

American Institute for Research

Rept. No:

Contract No: CDM-SR-60-10

TITLE: Psychological and Social Adjustment in a Simulated Shelter:
A Research Report.

ABSTRACT: The purpose of this study was to evaluate psychological and social factors as they relate to shelter habitability. A simulated shelter was constructed which provided for continuous auditory and visual monitoring of shelter occupants' reactions. Following a series of four short-duration pilot tests, a series of four experimental groups inhabited the shelter. Each experimental group consisted of thirty subjects and contained men, women and children. The first three groups remained in the shelter for one week and the fourth group remained in the shelter for two weeks. Major experimental variables were temperature and presence or absence of a trained and designated manager.

Agitation and tension were greatest immediately following shelter entry and prior to anticipated release. Mild depression was common toward the middle of shelter stay. Those effects were minimized through effective management. Desire to leave mounted steadily for most people from the time of shelter entry, but did not become overwhelming within a period of two weeks.

Psychological and social problems identified in this study which might be important in a real shelter are: (1) maximizing management effectiveness, (2) providing a situation conducive to adequate sleep, (3) minimizing conflict of social, moral, and ethical values.

		Special characteristics	Performance measures
Number of groups	4 pilot 4 experimental	-continuous auditory and visual monitoring -8 square feet and 58 cubic feet per person	-conflicting value systems noted
Group size or range	7-27 30		-effect of presence or absence of manager or leader
Group composition			-space was adequate -effect of excessive temperatures
Length of study or mission	22-44 hours 1 week-2 weeks		-lack of great amount of inter-personal conflict
Off-duty time requirements			
Off-duty time activities	-reading -games -modeling -pencils, pens -writing paper -wanted more group games		

INDEX NO: 136

Acc. No.:

AUTHOR: Cole, J. D.; Machir, D.; Altman, I.; Haythorn, W. W.; Pub. Date: July 1967
and Wagner, C. M.

AGENCY/COMPANY

Rept. No:

TITLE: Perceptual Changes in Social Isolation and Confinement

ABSTRACT:

This study explored perceptual changes as measured on the Holtzman Inkblot Test in isolated and non-isolated groups. Nine dyads formed at different levels on need-achievement, need-dominance, need-affiliation, and dogmatism worked and lived in a small room for ten days, with no outside contact. Matched controls followed a similar schedule but had access to other people and outside facilities. The Ss were administered the Holtzman Inkblot Test (HIT) pre-and post-experimental conditions. Both isolates and controls tended to be more observant of details following the experimental situation. However, the perceptions were of a less definite nature. There also was a tendency for Ss to be more dependent on external stimuli while less dependent on internal stimuli. The isolates showed a significant decrease in perception of human form while no such change was observed in the controls. It appeared that the isolate and control groups were under similar stress, in that few between-group differences were observed. There were no changes in HIT responses as a function of personality composition factors, suggesting the insensitivity of such perceptual responses to interpersonal compatibility and incompatibility.

		Special characteristics	Performance measures
Number of groups	2	-Refer to No. 134	-Holtzman Inkblot Test given day before 10-day run and at end of run
Group size or range	9 dyads subjects 9 dyads controls		
Group composition	Volunteers Navy		
Length of study or mission	10 days		
Off-duty time requirements			
Off-duty time activities	-cards -checkers -cribbage -reading		

INDEX NO: 137

Acc. No.:

AUTHOR: Findley, J. D.; Migler, D. M.; and Brady, J. V.

Pub. Date: November 1963

AGENCY/COMPANY University of Maryland
Institute for Behavioral Research
and
Walter Reed Army Institute of Research

Rept. No:

TITLE: A Long-Term Study of Human Performance in a Continuously
Programmed Experimental Environment

ABSTRACT:

A volunteer adult male was confined to a three room experimental chamber for five months. All activities were introduced by outside investigators, or automatically controlled. To maintain himself, and obtain recreation and rewards, a subject was required to perform various activities in a programmed order as directed by console indicators. Behavioral requirements in several activities were manipulated during the experiment. The effects of some of the short-term manipulations in the conditions of the environment were observed on behaviors both closely and distantly related to the behavior being manipulated. The effects of prolonged social isolation and confinement resulted in the development of progressive behavior strain, which ultimately led to the termination of the experiment. These included increasing frequency of limited toilet operation, increasing frequency of general negative complaints, somatic complaints, and requests for health items, increasing frequency of sleep, increased duration of toilet operations and eating, declining time in creative activities. Authors consider these behavioral decrements due more to social isolation than to confinement per se.

		Special characteristics	Performance measures
Number of groups	1	-3-room chamber	-effects of a programmed environment
Group size or range	1 individual		-frequency of selection of activity
Group composition	Volunteer adult male		-duration of activities
Length of study or mission	5 months		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 138

Acc. No.: AD 653881

AUTHOR: Hammes, J. A. ; and Ahearn, T. R.

Pub. Date: December 1966

AGENCY/COMPANY Civil Defense Research
 Margaret Hall
 225 North Milledge Avenue
 Athens, Georgia

Rept. No:

TITLE: Shelter Occupancy Studies at the University of Georgia

ABSTRACT: In the period 1962-66, the Civil Defense Research Staff at the University of Georgia has conducted ten simulated fallout shelter occupancy studies. These tests involved healthy men, women, and children, nine months through seventy-three years of age, in groups of thirty to five hundred persons, confined for periods of two days to two weeks under rather austere shelter conditions.

Detailed findings of these occupancy tests have been presented in previous annual reports. The present report contains findings of the 1966 occupancy tests, as well as a synthesis of all studies to date, and the implications for research in the National Shelter Program. A research prototype Community Shelter Handbook for Untrained Management is included.

		Special characteristics	Performance measures
Number of groups	10		
Group size or range	30 - 500 (1,729 total)		
Group composition	Men, Women, Children Ages: 9 Mo. -73 Yrs.		
Length of study or mission	2 - 14 days		
Off-duty time requirements			
Off-duty time activities	games; cards; reading; singing; coloring; listening to radio, talking; religious services; guitar playing; talent show.		

INDEX NO: 139

Acc. No.:

AUTHOR: Hammes, J. A. ; and Osborne, R. T.

Pub. Date: December 1965

AGENCY/COMPANY

Rept. No:

TITLE: Survival Research in Group Isolation Studies

Published: Journal of Applied Psychology, Vol. 49, No. 6, pp. 418-421

ABSTRACT:

The development of a nationwide fallout shelter system has initiated research on the physiological, psychological, and sociological aspects of group isolation. The most austere occupancy tests have been conducted at the University of Georgia. Results indicate that healthy men, women, and children can endure 2 weeks isolated confinement under conditions of severe austerity without suffering deleterious physiological or psychological effects.

		Special characteristics	Performance measures
Number of groups		-variables: water, food, sleeping conditions, sanitation kit, medical kit, recreational supplies	
Group size or range	All: 30		
Group I, II, III: men, women, children composition IV: 2 adults, children 7-12			
Length of study I: 4 days III: 2 weeks or mission II: 2 weeks IV: 1 week			
Off-duty time requirements			
Off-duty time activities	I, II, III: None IV: pens and pencils All: improvised cards, bingo, checkers. Suggested other supplies be provided		

INDEX NO: 140

AUTHOR: Haythorn, W. W.

AGENCY/COMPANY Behavioral Sciences Department
Naval Medical Research Institute
Bethesda, Maryland

Acc. No.: MF 022.01.03-
1002

Pub. Date: August 1967

Rept. No: 31

TITLE: Project ARGUS 1967: Five Year Review and Preview

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	-review of first five years of project to study effects of iso- lation on social emotional well-being and performance of small groups of men -next five year plan presented	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 141

Acc. No.:

AUTHOR: Haythorn, W. W.; and Altman, I.

Pub. Date: 1967

AGENCY/COMPANY

Rept. No:

TITLE: Personality Factors in Isolated Environments

Published: Chapter 13, Psychological Stress, Appley, M. H. and Trumbull, R.,
Appleton-Century-Crofts, New York.

ABSTRACT:

		Special characteristics	Performance measures
Number of groups	18	-subjects: -9 pairs worked and lived in 12' x 12' room -controls: -lived and ate away from their laboratory	-3 tasks
Group size or range	2		-reaction time on vigilance task (individual)
Group composition	Volunteers Navy		-abstract reasoning task (pair)
Length of study or mission	10 days--subjects & controls did not know length of study		-questionnaires and interviewing after test
Off-duty time requirements			-combat information center task
Off-duty time activities	-games -religious reading -other reading on days 1, 4, 7, and 10		Assessment: -stress increased -isolated subjects performed better than controls

INDEX NO:142

Acc. No.:

AUTHOR: Haythorn, W. W. ; and Altman, I.

Pub. Date: 1967

AGENCY/COMPANY

Rept. No:

TITLE: Together in Isolation

Published: Transaction, Vol. 4, No. 3, pp. 18-22

ABSTRACT:

This study demonstrated that the stresses of isolation are considerably affected by the relations between personality types. Good adjustment may decrease or modify stress in constructive ways; bad adjustment may increase, exaggerate, or complicate it, sometimes in destructive ways.

Should interpersonal conflict therefore be avoided in today's space capsules, Antarctic stations, and sea labs? No. It can enliven an existence of otherwise deadly and crippling monotony. It can produce better performance. The questions we now have to answer are: How much stress? What kinds? How to assure that proper matches are made?

		Special characteristics	Performance measures
Number of groups	18	-small room -isolated from outside no outside communica- tion	-tasks -questionnaires
Group size or range	2		
Group composition	Navy		Assessment: -isolated pairs performed better than non-isolated
Length of study or mission	10 days		
Off-duty time requirements	-several hours a day provided		
Off-duty time activities			

INDEX NO: 143

Acc. No.:

AUTHOR: Haythorn, W. W.; Altman, I.; and Myers, T. I.

Pub. Date: 1966

AGENCY/COMPANY

Rept. No:

TITLE: Emotional Symptomatology and Subjective Stress in Isolated Pairs of Men

Published: Journal of Experimental Research in Personality, Vol. 1, No. 4, pp. 290-305

ABSTRACT: Thirty-six Navy recruits were run in dyads, half under conditions of isolation and half control. Dyads were organized to satisfy a 3 x 3 Greco-Latin square design on four personality characteristics--need achievement, need affiliation, need dominance and dogmatism--such that homogeneous high, heterogeneous and homogeneous low compositions on each personality characteristic occurred. Isolated dyads lived and worked in a small room for ten days with minimal outside contact. Controls slept and ate in regular Navy facilities but otherwise followed the same task and work schedule as isolation groups. At the end of the experiment, Ss indicated their reaction to isolation on a subjective stress scale and an emotional symptomatology questionnaire.

Results confirmed hypotheses that (a) social isolation is stress-inducing; and (b) stress is a function of interpersonal needs, with dyads having both men high on dominance experiencing more stress than those heterogeneous in dominance, and those dyads heterogeneous in achievement showing more stress than homogeneous groups. The results indicate the importance of group composition to functioning in isolated environments, and perhaps to other stressful situations.

		Special characteristics	Performance measures
Number of groups	2	<ul style="list-style-type: none"> -subjects isolated -controls and subjects paired to fit a Greco-Latin square defined by four personality variables -12' x 12' room not soundproofed -controls allowed to leave rooms except for tasks 	<ul style="list-style-type: none"> -reported subjective stress and symptomatology -3 tasks -post-experimental tests Subjective stress scale, et. al.
Group size or range	9 dyads Subjects 9 dyads Controls		
Group composition	Navy recruits		
Length of study or mission	10 days		
Off-duty time requirements			
Off-duty time activities	<ul style="list-style-type: none"> -cards -checker board -religious reading material -pre-selected reading material 		

INDEX NO: 144

Acc. No.:

AUTHOR: Myers, T.I.

Pub. Date: 1964

AGENCY/COMPANY

Rept. No:

Naval Medical Research Institute
Bethesda, Maryland

TITLE: Sensory and Perceptual Deprivation

Presented at symposium on Medical Aspects of Stress in the Military
Climate, Walter Reed Army Institute of Research, Washington, D. C.,
April, 1964.

ABSTRACT: The author outlined a few of the results from the first decade of research upon sensory deprivation and perceptual isolation. The subjective stressfulness of severe monotony seems well established by controlled experiment, along with the phenomena of tedium, temporal disorientation, restlessness, difficulty in concentrating, feelings of unreality, and vivid visual imagery. Study of a broader spectrum of behavioral measures has identified a cluster of performances which appear to be facilitated by perceptual isolation, in addition to measures, e. g., intellectual functioning, which are likely to be impaired. The facilitation cluster includes: improvement in some aspects of memory and learning, and simple vigilance; heightened desire for and greater persuasive impact of meaningful stimulations; and perhaps simple sensory hyperacuties. Recent physiological data denotes a lowering of arousal with increasing duration of perceptual isolation. The great complexity of factors which are in effect manipulated in any experiment continues to plague attempts at simple explanation. Perhaps an emphasis upon these difficulties might be the most accurate barometer of the state of the field. Yet it also seems true that some pattern is emerging among the findings, hopefully being detectable true signal among the noise.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 145

Acc. No.:

AUTHOR: Myers, T.I.; Murphy, D.B.; and Smith, S.

Pub. Date: September 1963

AGENCY/COMPANY U. S. Army Leadership Human Research Unit
P. O. Box 787
Presidio of Monterey, California

Rept. No:

TITLE: The Effect of Sensory Deprivation and Social Isolation on Self-Exposure to Propaganda and Attitude Change

Presented at American Psychological Association, Sept., 1963

ABSTRACT:

Three experiments were devoted to assessing the effects on subjects' behavior of deliberate attempts to influence their judgments and attitudes. This particular report studied the effects of isolation on self-exposure to propaganda and attitude change.

		Special characteristics	Performance measures
Number of groups	2	<ul style="list-style-type: none"> -subjects 48 hours in dark, sound-proof cubicles 7' x 9' -audio network connected cubicles and other test rooms with control room 	-self-exposure to recordings about Turks
Group size or range	45 subjects 64 controls		
Group composition	Army (Volunteers)		Assessment: -conformity greater among lower intelligence subjects
Length of study or mission			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 146

AUTHOR: Myers, T. I.; Murphy, D. B.; and Smith, S.

AGENCY/COMPANY

Acc. No.:

Pub. Date: 1963

Rept. No:

TITLE: Laboratory Studies of Sensory Deprivation: Findings of interest to Human Engineering.

Presented at Human Factors Society meeting, Palo Alto, Calif., Oct. 1963

ABSTRACT:

		Special characteristics	Performance measures
Number of groups		<ul style="list-style-type: none"> -solitary confinement -dark, sound-proof 7' x 9' cubicle -bland diet -constant temperature -used controls -monitored by intercom munication -could abort 	<ul style="list-style-type: none"> -visual sensations -retrospective reports -vigilance -intellectual efficiency -susceptibility to being influenced -reactions to stimulation -diurnal cycle
Group size or range	30-40		
Group composition	males, U.S. Army (Volunteers)		
Length of study or mission	96 hours		
Off-duty time requirements			
Off-duty time activities			<p>Assessment:</p> <ul style="list-style-type: none"> -performance decrement on complex tasks

INDEX NO: 147

Acc. No.:

AUTHOR: Myers, T. I.; Murphy, D. B.; Smith, S.;
and Goffard, S. J.

Pub. Date: June 1966

AGENCY/COMPANY HumRRO
George Washington University
Human Resources Research Office

Rept. No: TR 66-8

Contract No: DA 44-188-ARO-
2TITLE: Experimental Studies of Sensory Deprivation and
Social Isolation

ABSTRACT:

To evaluate experimentally some of the psychological effects of sensory deprivation and social isolation, 176 randomly selected volunteers were placed in dark, soundproofed cubicles for four days, while an equal number of other randomly selected volunteers followed a normal routine. Psychological tests and measures were given both Cubicle and Control subjects before, during, and after isolation. Cubicle subjects reported the isolation experience to be unpleasant, boring, and stressful. One-third of them requested early release from the cubicles. In comparison with the Control subjects, Cubicle subjects were better on simple intellectual tasks and auditory vigilance. They were worse on more complex intellectual tasks, and under some conditions, appeared to be more susceptible to influence. They more often sought meaningful stimulation but also showed some tendency to avoid stimulation. Sensory deprivation and social isolation do have psychological effects, but they are neither simple nor clear-cut.

		Special characteristics	Performance measures
Number of groups	2	-dark, quiet chambers -7' x 9' -couldn't tell time or smoke	-abilities to think, solve problems, maintain vigilance and maintain independent judgment in face of propaganda and group pressure
Group size or range	176 subjects 176 controls		
Group composition			
Length of study or mission	4 days for each experiment		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 148

Acc. No.:

AUTHOR: Myers, T. I.; Murphy, D. B.; Smith, S.;
and Windle, C.

Pub. Date: February 1962

AGENCY/COMPANY U. S. Army Leadership Human Research Unit
Presidio of Monterey, California

Rept. No:

TITLE: Research Memorandum. Experimental Assessment of a Limited Sensory
and Social Environment: Summary Results of the HumRRO Program

ABSTRACT: Task ENDORSE has been directed toward experimental analysis of the effects of social isolation and sensory deprivation upon behavior, focusing upon these behavioral changes of particular implication for the potential coercion and exploitation of an individual in the captive situation.

Experiments involving isolation of more than 200 subjects for periods of up to six days have been carried out in light proof, sound proof cubicles.

This report describes the procedures of Task ENDORSE studies and presents findings with respect to such dependent variables as retrospective evaluations, subjective stressfulness, intellectual efficiency, auditory vigilance, and reported visual sensations. The studies included in this summary are sampled both from the initial research phase which appraised the potency (or "stressfulness") of dark quiet isolation, and from later phases devoted to the further assessment of the effects of sensory deprivation and social isolation. Following description and summary of ENDORSE findings, a discussion section contributed by Dr. Charles Windle of the Director's Office, HumRRO, comments more generally on the state of research in the field of sensory deprivation.

Special characteristics		Performance measures
Number of groups	-lightproof, soundproof cubicle -audio monitoring -no smoking -no watch -controls and subjects compared	-retrospective evaluations -subjective stressfulness -intellectual efficiency -auditory vigilance -reported visual sensations
Group size or range 200+		
Group composition Army volunteers		
Length of study or mission 96 hours		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 149

Acc. No.:

AUTHOR: Murphy, D. B. ; Smith, S. ; and Myers, T. I.

Pub. Date: September 1963

AGENCY/COMPANY U. S. Army Leadership Human Research Unit
P. O. Box 787
Presidio of Monterey, California

Rept. No:

TITLE: The Effect of Sensory Deprivation and Social Isolation on the Conditioning of Connotative Meaning

Presented to the American Psychological Association

ABSTRACT:

Three experiments were devoted to assessing the effects on subjects' behavior of deliberate attempts to influence their judgments and attitudes. This particular report studies the effects of isolation on the conditioning of connotative meaning.

		Special characteristics	Performance measures
Number of groups	2	-subjects in dark, sound-proofed cubicles 7' x 9' -audio network connected cubicles and other test rooms with control room	-conditioning trials -recall test -semantic differential test of attitudes
Group size or range	62 subjects 62 controls		
Group composition			Assessment: -greater attitude change found for isolated groups
Length of study or mission	96 hours		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 150

Acc. No.:

AUTHOR: Smith, E. E.

Pub. Date: January 1, 1959

AGENCY/COMPANY

Rept. No:

TITLE: Individual Versus Group Goal Conflict

Published: The Journal of Abnormal and Social Psychology, Vol. 58, No. 1, pp. 134-137

ABSTRACT:

An experiment was performed in which a conflict was produced between individual and group goal attainment. An overt situation was compared to a covert situation, and a high individualistic motivation condition with a low individualistic motivation condition. The hypotheses were: (1) When faced with an alternative, persons will choose the attainment of their own goal in preference to that of a group goal less frequently in an overt situation, in which their choice is known by the group, than in a covert situation where their choice is secret. (2) When faced with an alternative, persons will choose the attainment of their own goal in preference to that of a group goal more frequently under increased individualistic motivation than under reduced individualistic motivation. The first hypothesis was supported. The second hypothesis was found to hold only in covert situations.

A post hoc finding that individuals apparently feel freer to change secret decisions than public decisions is discussed.

		Special characteristics	Performance measures
Number of groups	20	-4 conditions (5 crews in each)	-individual versus group goal decisions
Group size or range	6		
Group composition	Air Force crews		
Length of study or mission			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 151

Acc. No.:

AUTHOR: Smith, S.; Myers, T. I.; and Johnson, E.

Pub. Date: 1966

AGENCY/COMPANY

Rept. No:

TITLE: Stimulation Seeking Throughout Seven Days of Sensory Deprivation

Published: Perceptual and Motor Skills, Vol. 23, pp. 1151-1163

ABSTRACT: Sixty volunteer Naval enlisted men participated in a study of 7-day individual isolation. Forty Ss lived in small, dark, quiet rooms with little to do (SD). The other 20 served in a live-in-the-lab control group (C) with ad lib access to lights, recreational materials, and intercom conversation with another C S if mutually desired. Nineteen SD Ss, but only 1 C S, requested early release. Pre-, during-, and post-isolation tests were given. In a test of stimulation seeking, boring stock reports could be heard during a 1 hour period on each of Days 1, 4, and 7 of isolation. SD Ss selected to listen significantly more than Cs on Days 4 and 7, with the differences increasing over time. Day 1 listening (about 6 hours after isolation began) predicted who would later request release. In the discussion, currently available stimulation-seeking data are summarized and integrated.

		Special characteristics	Performance measures
Number of groups	2	-subjects lived in small dark quiet rooms, little to do -controls lived in lab, lights, recreational material available, intercom with other C Ss	-voluntary listening to stock report
Group size or range	40 subjects 20 controls		
Group composition	Navy		
Length of study or mission	7 days		
Off-duty time requirements			Assessment: -isolated subjects were higher in stimulation seeking propensity
Off-duty time activities	Controls: -television -radio -music -books -magazines -newspaper -cards -conversation		

INDEX NO: 152

Acc. No.:

AUTHOR: Smith, S.; and Myers, T.I.

Pub. Date: September 1967

AGENCY/COMPANY Naval Medical Research Institute
Bethesda, Maryland

Rept. No:

TITLE: Time-Shared, Perceptual-Motor Skills During 7 Days of Isolation

Published: Psychonomic Science, Vol. 9, No. 2

ABSTRACT:

40 Ss attempted to remain in dark, quiet sensory deprivation (SD) for 7 days. 20 Ss lived individually in a live-in-the-lab control condition (C) affording much recreational activity. 19 SDs but only 1 C requested early release. SDs outperformed Cc on a time-shared, perceptual-motor task which involved tracking, turning off location-coded tones, and turning off a noise. These data are further evidence that performance enhancement sometimes occurs during SD.

		Special characteristics	Performance measures
Number of groups	2	-dark, sound-proof room	-time-shared, perceptual- motor task -19 Ss and 1 C aborted
Group size or range	40 Subjects 20 Controls		
Group composition	Navy enlisted		
Length of study or mission	7 days		Assessment: -subjects performed better than controls
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 153

Acc. No.:

AUTHOR: Smith, S.; Myers, T. I.; and Murphy, D. B.

Pub. Date: November 1963

AGENCY/COMPANY U. S. Army Leadership Human Research Unit
Presidio of Monterey, California

Rept. No:

TITLE: Conformity to a Group Norm as a Function of
Sensory Deprivation and Social Isolation

ABSTRACT:

The study reported here was designed to compare, on a measure of conformity to a group norm, individuals who have been in a limited sensory and social environment for an extended time period with a control group not so deprived. The experiment led to the following conclusions: (1) A three-day period of voluntary social isolation and sensory deprivation afforded by confinement in a dark, quiet cubicle did not affect the extent to which subjects conformed to an incorrect group consensus, as compared to that of a control group engaged in routine social and sensory activities during the same period, and (2) Examination of the conformity to a group norm (CGN) test and other procedures did not reveal any basis for belief that the experimental technique was particularly insensitive to a hypothetical true change in conformity to a group norm.

		Special characteristics	Performance measures
Number of groups	2	Controls: -tasks but no isolation similar cubicles for tasks Subjects: -audio monitoring of cubicle; dark, sound-proofed; 7ft. by 9 ft.	-conformity to a group norm (conformity to a Group Norm test)
Group size or range	58 subjects 40 controls		Assessment: -19 subjects aborted -isolation did not affect measures on the CGN test
Group composition	Army (Volunteers)		
Length of study or mission	4 days		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 154

Acc. No.:

AUTHOR: Smith, S.; Myers, T. I.; and Murphy, D. B.

Pub. Date: August 1967

AGENCY/COMPANY

Rept. No:

TITLE: Restlessness and Life-Sustaining Activities During Four Days
of Sensory Deprivation

Published: Psychonomic Science, Vol. 8, No. 12

ABSTRACT:

Subjects undergoing 4-day dark, quiet sensory deprivation (SD) showed more restlessness and life-sustaining activity during the day than at night. These results contrast with retrospective reports of disrupted diurnal cycles. Daytime restlessness increased over days. Day 2 daytime restlessness predicted later requests for release and, among early release (ER) subjects, correlated inversely with time in isolation. ER subjects were more restless the hour before termination than were all other subjects during that hour.

		Special characteristics	Performance measures
Number of groups	48	-dark, quiet cubicles -25 requested early release	-restlessness activity monitored and counted -life sustaining activity monitored and counted
Group size or range	individuals		
Group composition	Army enlisted men		
Length of study or mission	4 days		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 155

Acc. No.:

AUTHOR: Smith, S.; Myers, T.I.; Murphy, D.B.

Pub. Date: June 1967

AGENCY/COMPANY

Rept. No:

TITLE: Vigilance During Sensory Deprivation

Published: Perceptual and Motor Skills, Vol. 24, pp. 971-976

ABSTRACT:

In 2 studies, isolated Ss (N=59), while undergoing 4 days of dark, quiet sensory deprivation (SD), exhibited superior auditory vigilance compared with that shown by non-deprived controls (N=76). This finding contrasts with the usual reports of performance decrements attributed to SD. There are indications that performance on such tests may be quite different when measured post-isolation rather than during isolation. Reasons for the apparent differences are discussed, as are the concepts of arousal, stimulus hunger, and distractibility, which appear to be useful in understanding these vigilance results.

		Special characteristics	Performance measures
Number of groups	2	-dark, sound-proofed room, 7' x 9' 1-way communication; Es to Ss -full life-support facilities	-auditory--vigilance test
Group size or range	59 Subjects 76 Controls		
Group composition	Army enlisted men; screened		Assessment: -performance was superior to controls
Length of study or mission	4 days		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 156

Acc. No.: AD 237130

AUTHOR: Strobe, W. E.; Etter, H. S.; Goldbeck, R. A.;
Heiskell, R. H.; and Sheard, J. H.

Pub. Date: May 1960

AGENCY/COMPANY U. S. Naval Radiological Defense Laboratory
San Francisco, CaliforniaRept. No: USNRDL-TR-
418TITLE: Preliminary Report on the Shelter Occupancy Test
of 3-17 December 1959

ABSTRACT:

This experiment tested the shelter facilities that contribute to habitability, including routines and diversions that reduce to a minimum the discomforts of living in a confined space, by a full-scale occupancy of the experimental shelter for a considerable period. The test also provided an opportunity to gain experience in problems of shelter management, to determine response times for various protective actions, and to evaluate the suitability of several low-cost shelter rations. The shelter organization tested, which consisted in essence of a forceful well-trained shelter commander working with elected representatives of the shelter population, was effective in shelter management and contributed in an important way to shelter habitability and shelteree morale.

		Special characteristics	Performance measures
Number of groups	1	-25' x 48' shelter arched roof -continuous television monitoring -audio communication with the outside	
Group size or range	100		
Group composition	male prisoners (Volunteers)		
Length of study or mission	2 weeks		
Off-duty time requirements	-8 recreation clerks -about 4-5 hours/day		
Off-duty time activities	-games at tables -library service -record player -pinocle -chess -whist -movies		

INDEX NO: 157

Acc. No.: AD 253 856

AUTHOR: Strobe, W. E.; Schultze, D. P. and Pond, J. I.

Pub. Date: March 1961

AGENCY/COMPANY U.S. Naval Radiological Defense Lab.
San Francisco, California

Rept. No: USNRDL-TR-502

TITLE: Preliminary Report on the Shelter Occupancy Test of 25-29 July 1960

ABSTRACT:

The USNRDL experimental shelter at Camp Parks, California, was occupied continually by 100 male volunteers for a period of 100 hours under summer conditions of outside air temperature. During this period, all aspects of the shelter environment were monitored, as well as the actions and responses of the shelterees. Modifications to shelter facilities were tested, the palatability of and preparation procedures for an experimental shelter diet were evaluated, and additional experience in shelter management was obtained. This is a preliminary report made in advance of complete analysis of the data.

		Special characteristics	Performance measures
Number of groups	1		
Group size or range	100		
Group composition	male prisoners (Volunteers)		
Length of study or mission	5 days		
Off-duty time requirements			
Off-duty time activities			

[illegible]

INDEX NO: 158

Acc. No.:

AUTHOR: Altman, I; and Haythorn, W.

Pub. Date: 1964

AGENCY/COMPANY Bureau of Medicine and Surgery
Navy Department, Research Division

Rept. No: MR005-12-2005-
01

TITLE: Organizational Size and System Characteristics and System Functioning

ABSTRACT: The impact of variations in crew size on different aspects of system functioning are quite diverse. To assess the importance of variations in crew size and to make choices between different crew sizes requires a weighting of the importance of various factors to system functioning and understanding of the nature of the mission which is to be satisfied. The state of the art in the behavioral sciences does not allow for a statement of simple relationships between size and endurance, but does seem to imply that current knowledge is limited with respect to this problem and that crews of an intermediate size, e. g., 20-60 members, seem to minimize the disadvantages of much smaller crews and much larger crews and to allow most flexibility with regard to optimizing system functioning. Without further analysis and empirical evidence, however, this general conclusion is, at best, only a tentative estimate and must be treated as such.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 159

Acc. No.: AD 616148

AUTHOR: Gunderson, E. K. E.

Pub. Date: April 1965

AGENCY/COMPANY

Rept. No:

TITLE: The Reliability of Personality Ratings Under Varied Assessment Conditions

Published: Journal of Clinical Psychology, Vol. XXI, No. 2, pp. 161-164

ABSTRACT:

Pairs of clinical judges examined 719 Navy men and independently rated them on a series of personality traits. Assessment conditions varied in terms of similarity-dissimilarity of clinical methods and prior experience in a professional working relationship.

Pearson correlations between judges were generally significant, but uniformly low, indicating that the judges could not agree with high consistency in evaluating specific personality attributes. Results indicated that differences in methods of clinical appraisal affected reliability, favorability, and variance of clinical judgments. The presence or absence of a previous professional working relationship between clinicians did not appear to influence agreement. Further quasi-experimental studies of the reliability of personality ratings should lead to better understanding of differences in clinicians' reactions to behavioral cues and hence to better control of clinical rating methods.

		Special characteristics	Performance measures
Number of groups	1	-test of clinical rating methods	-rate volunteers on 19 items (6 points per item) -low uniformity in methods
Group size or range	23 psychologists 31 psychiatrists		
Group composition			
Length of study or mission			
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 160

Acc. No.: AD 632 497

AUTHOR: Gunderson, E. K. E.

Pub. Date: March 1966

AGENCY/COMPANY

Rept. No: 66-15

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California

TITLE: Selection for Antarctic Service

ABSTRACT:

Environmental conditions, group composition, and work roles at Antarctic scientific stations are described, and possible sources and effects of stress in these environments are indicated. Cultural and psychological characteristics of various Navy and civilian occupational groups represented in wintering-over parties are compared, and the selection problem and procedures are outlined. Personal history, clinical, and self description variables which correlated significantly with three performance criteria are presented for Navy enlisted and "Seabee" groups, providing a summary of characteristics that distinguish the successful Navy man at small Antarctic stations.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 161

Acc. No.: AD 632060

AUTHOR: Gunderson, E. K. E. ; and Kapfer, E. L.

Pub. Date: April 1966

AGENCY/COMPANY

Rept. No: 65-10

TITLE: The Predictability of Clinicians' Evaluations from Biographical Data

Published: Journal of Clinical Psychology, Vol. XXII, No. 2, pp. 144-150

ABSTRACT:

The study explored relationships between biographical information input and clinical evaluation output in an assessment program designed to select men for unusual and potentially hazardous assignments. Subjects were 14 experienced clinicians who served as examiners for the U.S. Antarctic research program and in this capacity evaluated Navy and civilian candidates for Antarctic scientific expeditions. Two professional groups, psychologists and psychiatrists, and two examining methods, Rorschach and interview, were compared with respect to relationships between biographical questionnaire data and clinical evaluation scores. Consistency among individual clinicians in their apparent utilization of 23 items of biographical information was revealed by the multiple regression technique. Rank or experience consistently contributed to prediction of the clinicians' evaluations, but variable weights were given to other attributes.

		Special characteristics	Performance measures
Number of groups	2	-refer to No. 2	-Rorschach
Group size or range	9 clinical psychologists 5 psychiatrists		-interview data (rating scales)
Group composition			-biographical questionnaire related to biographical information from questionnaires
Length of study or mission	2 expeditions		
Off-duty time requirements			
Off-duty time activities			

INDEX NO: 162

Acc. No.: AD 280599

AUTHOR: Gunderson, E. K. E.; and Nelson, P.

Pub. Date: April 1962

AGENCY/COMPANY Special Environments Branch
 U. S. Navy Medical Neuropsychiatric Research Unit
 San Diego, California

Rept. No: 62-4

TITLE: Clinician Agreement in Assessing for an Unknown Environment

Published: Journal of Clinical Psychology, Vol. 20, pp. 290-295

ABSTRACT:

The results have clearly indicated areas of general agreement among clinicians in approaching an ambiguous assessment task. Using largely different procedures and sources of information, that is, brief interviews oriented toward personal history versus Rorschachs, psychiatrists and psychologists as groups utilized a set of assessment dimensions in much the same way, held similar assumptions about relevant personality characteristics, and evaluated the potentially stressful attributes of the environment for which the assessment was conducted in very similar terms. These findings appear to be an important first step in understanding the frame-of-reference adopted by clinicians in assessing personnel for unknown environments. The questions of the validity or predictive efficiency of various aspects of this general frame-of-reference and their predictive accuracy are presently being investigated for the Antarctic assessment setting. (Authors)

Special characteristics		Performance measures
Number of groups	1	-judgment tasks assessed by experimenters
Group size or range	20	
Group composition	10 psychiatrists 10 psychologists	
Length of study or mission		
Off-duty time requirements	-psychiatrists considered "use of spare time" more important in ranking adjustment than psychologists	
Off-duty time activities		

INDEX NO: 163

Acc. No.:

AUTHOR: Gunderson, E. K. E. ; and Nelson, P. D.

Pub. Date: 1966

AGENCY/COMPANY

U. S. Navy Medical Neuropsychiatric Research Unit
San Diego, California 92152

Rept. No: 65-6

TITLE: Criterion Measures for Extremely Isolated Groups

Published: Personnel Psychology, Vol. 19, pp. 67-80

ABSTRACT:

The purpose of the present research was the development of individual performance criteria for use in the unusual and potentially stressful environments of Antarctic scientific stations. A factor analysis of supervisor and peer evaluations revealed that three factors corresponding to three hypothesized behavior components--emotional stability, task motivation, and social compatibility--accounted for a large proportion of the variance in a general performance criterion. Data from new samples were analyzed to determine convergent and discriminant validities of the three behavior factors measured by the two methods (supervisor ratings and peer nominations). Results provided substantial evidence for convergent validities of the three factors but only partial confirmation of discriminant validities.

Special characteristics		Performance measures
Number of groups	Part I: 7 Part II: 8	I: -supervisor and peer evaluations of emotional stability, task motivation and social compatibility
Group size or range	I: 40% Civilians 60% Navy (Volunteers) II: Civilian Navy (Volunteers)	
Group composition	I: 10 unspecified II: 12-35	
Length of study or mission	I: 3 expeditions II: 2 expeditions	
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 164

Acc. No.:

AUTHOR: Haythorn, W. W.

Pub. Date: 1967

AGENCY/COMPANY Naval Medical Research Institute
Bethesda, Maryland

Rept. No:

TITLE: Interpersonal Stress in Isolated Groups

ABSTRACT: The report reviews the social psychological research requirements in the area of group behavior under stress. Several shortcomings are noted (a) While there have not been many longitudinal studies, it seems likely that the relationship among environmental stimuli, perceived threat, physiological states, and interpersonal behavior change over time, (b) It is necessary to pursue research that is both intensive and extensive in dependent variable measurement; designs with a variety of dependent measures -- approaching real-world complexity in stimulus and response richness. (c) A capability to build computer models of complex organizational processes represents a very promising methodological solution to this problem. (d) More research on interpersonal compatibility within a more sophisticated framework of group compositional variables seems indicated.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 165

Acc. No.:

AUTHOR: Haythorn, W. W.

Pub. Date: Nov. 1966

AGENCY/COMPANY Naval Medical Research Institute
Bethesda, Maryland

Rept. No:

TITLE: Isolation, Stress and the Design of Closed Ecologies

Paper presented at the Human Factors Society Convention, Nov. 1966,
Anaheim, California

ABSTRACT: The isolation and confinement of small groups of men to closed ecological systems for prolonged periods of time is an increasingly important aspect of systems design. As vehicles and fixed habitations are designed for environments hostile to human existence, it becomes necessary to include closed ecological considerations in the design. Space vehicles, underseas vehicles and habitations, and surface vehicles designed for operation in high radiation fields must all be capable of operating with little or no inputs from the external world for prolonged periods of time. Certain psychological and social-psychological characteristics are not trivial and should not be ignored in the design of any system requiring small groups of men to function for long periods of time isolated from the rest of society and confined in a relatively small vehicle or fixed habitation.

	Special characteristics	Performance measures
Number of groups	-closed ecological systems -performance; territoriality behavior; social interaction; subjective stress	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
	-need stimulus enrichment	
Off-duty time activities		

INDEX NO: 166

Acc. No.:

AUTHOR: Haythorn, W. W.

Pub. Date: October 1963

AGENCY/COMPANY

Rept. No:

TITLE: The Role of Compatibility in Isolated Work-Oriented Groups

Presented to the Human Factors Society Symposium, Oct. 1963,
Palo Alto, California

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 167

Acc. No.:

AUTHOR: McGrath, J. E. ; and Altman, I.

Pub. Date: 1966

AGENCY/COMPANY Holt, Rinehart & Winston, Inc.
New York, New York

Rept. No:

TITLE: Small Group Research: A Synthesis and Critique of the Field

ABSTRACT:

Special characteristics		Performance measures
Number of groups	-presents an extensive annotated bibliography through 1962	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 168

Acc. No.:

AUTHOR: Rasmussen, J. E. ; and Haythorn, W. W.

Pub. Date:

AGENCY/COMPANY U. S. Naval Medical Research Institute
National Naval Medical Center
Bethesda, Maryland

Rept. No:

TITLE: Selection and Effectiveness Considerations Arising From Enforced Confinement of Small Groups

Proceedings of Second Manned Space Flight Meeting, American Institute of Aeronautics and Astronautics, April 23, 1963.

ABSTRACT: The closed ecological systems of manned space vehicles and future weapon systems will engender specific individual and interpersonal stresses, the overall significance of which will exceed anything heretofore encountered. The significance of these problems has been recognized, but very little systematic effort has been focused on evaluating their magnitude and devising techniques for coping with them. The problem area of concern is one which extends beyond the province of man-machine research as it is presently envisioned.

On the basis of the Navy's operational and research experience with small isolated groups it is evident that mission success is dependent upon more than adequate human engineering and the selection of technically qualified and trained personnel. Two additional variables are introduced by the use of small crews in the closed ecology of space and future weapon systems vehicles. Effectiveness of interpersonal interaction among personnel operating the system is a critical variable in mission success. Secondly, factors inherent in prolonged isolation and physical confinement assume a significant magnitude in both individual and group effectiveness. The nature, significance, and implication of these problems is discussed in terms of crew composition, maintenance of crew effectiveness, closed space environment problems, and performance criteria.

	Special characteristics	Performance measures
Number of groups	reviews: -operation Deep-Freeze -submarine studies -Air Force and Army experience with crew compositions with implications for: -closed ecological systems -criteria of effectiveness -group composition and organization -maintenance of crew effectiveness -environmental restructuring and enrichment	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 169

Acc. No.:

AUTHOR: Ruff, G. E.

Pub. Date: 1963

AGENCY/COMPANY

Rept. No:

Published:

TITLE: Psychological and Psychophysiological Indices of Stress

Published: Chapter 2, Unusual Environments and Human Behavior, Burns, N. M.,
Chambers, R. M. and Hendler, E., The Free Press of Glencoe.

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 170

Acc. No.:

AUTHOR: Sells, S. B.

Pub. Date: September 1967

AGENCY/COMPANY

Rept. No:

TITLE: Symposium: Factors Affecting Team Performance In Isolated Environments

Presented at American Psychological Association 75th Annual Convention,
Washington, D. C.

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 171

Acc. No.:

AUTHOR: Smith, S.

Pub. Date:

AGENCY/COMPANY

Rept. No:

TITLE: Studies of Small Groups in Confinement

Published: Chapter in Sensory Deprivation: Fifteen Years of Research, Zubek, J. P.,
(ed.), Appleton-Century-Crofts, New York. (To be published during
1967)

ABSTRACT:

	Special characteristics	Performance measures
Number of groups	Small groups in confinement	
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 172

Acc. No.:

AUTHOR: Smith, S.; Meyers, T.I.; and Edmondo, P.M.

Pub. Date: May 1967

AGENCY/COMPANY Naval Medical Research Institute
Bethesda, Maryland

Rept. No: 27

TITLE: The NMRI Deep Isolation Laboratory

ABSTRACT:

The Naval Medical Research Institute deep-isolation laboratory is described and various aspects of its instrumentation are detailed. The lab consists of six highly-sound-reduced rooms and an adjacent control room. The rooms contain full life-support facilities for carrying out multiple-day studies of isolated confinement. Safety monitoring and psychological testing are conducted from the control room with no required physical contacts with test subjects. Automated testing and data recording are carried out, in some cases 24 hours a day, utilizing a versatile audio system and extensive programming and data recording equipment. This description emphasizes the furnishings and instrumentation installed for Project COMONOT, a study of 7-day isolation of individuals under different conditions of monotony and social contact.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 173

Acc. No.:

AUTHOR: Smith, S. ; Meyers, T. I. ; Johnson, E. ; Milstein, S. L. ; Walsh, J. M. ; Marlow, E. S. ; and Kushner, E. N. Pub. Date: June 1967

AGENCY/COMPANY

Rept. No: 28

Naval Medical Research Institute
Bethesda, Maryland

TITLE: Procedural Details for Project COMONOT

ABSTRACT:

In this paper a detailed summary is given of the research procedure employed during the first phase of Project COMONOT. COMONOT (comparative monotony) is an experimental assessment of various conditions of boredom and monotony, at one extreme requiring a 7-day stay in a totally dark, sound-proof cubicle. Attention in this paper is focused on: (1) the rationale of the study; (2) definition of the three experimental conditions; (3) a description of the subject population; (4) details of the test program; and (5) how we dealt with factors affecting the experimental "set." Also included are the actual briefing scripts and test schedules followed. The paper is intended to provide the sorts of additional procedural details that, due to space limitations, usually must be omitted from journal articles.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 174

Acc. No.:

AUTHOR: Walters, R. H.; and Henning, G. B.

Pub. Date: 1961

AGENCY/COMPANY

Rept. No:

TITLE: Isolation, Confinement and Related Stress Situations

Published: Aerospace Medicine, Vol. 32, pp. 431-434

ABSTRACT: In this paper the authors draw attention to difficulties of trying to develop theories to integrate the diverse problems and responses to isolation, sensory deprivation, and confinement. The effects of sensory deprivation and social isolation have been inextricably confounded. Some situations, e. g., solitary travel and space flight, provide a wealth of sensory input but little opportunity for social contact. Some of the effects of sensory deprivation are probably more closely related to fear of abandonment. Many of the social isolation situations involve small groups rather than single individuals. At the same time responses of people habituated to such environments are unlikely to parallel those of people suddenly deprived of accustomed social and cultural experiences.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 175

Acc. No.:

AUTHOR: Weybrew, B.B.

Pub. Date: September 1960

AGENCY/COMPANY

Rept. No:

TITLE: Human Factors and the Work Environment

Published: Journal of Occupational Medicine, Vol. 3, pp. 290-294

ABSTRACT: In summary, this paper attempts to survey the literature pertaining to the effects of isolation upon humans. Radical isolation may be seriously disruptive particularly in the perceptual and cognitive areas. During the confinement of prolonged submergences, many submariners show decrements in motivation and in the effectiveness of their interpersonal relationships. Quite possibly some undesirable psychophysiological changes also occur. For most men, however, these effects are not seriously debilitating. Our research argues for the use of precise assessment techniques to be applied to the problem of selecting men with maximum potentiality to adjust to the stresses encountered during prolonged exposure to an isolated environment.

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

INDEX NO: 176

AUTHOR: Wilkins, W.L.

AGENCY/COMPANY

Acc. No.:

Pub. Date: 1967

Rept. No:

TITLE: Group Behavior in Long Term Isolation

Published: Chapter 10, Psychological Stress, Appley, M. H. and Trumbull, R.,
Appleton-Century-Crofts, New York

ABSTRACT:

	Special characteristics	Performance measures
Number of groups		
Group size or range		
Group composition		
Length of study or mission		
Off-duty time requirements		
Off-duty time activities		

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